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ABSTRACT

This conference proceeding presents abstracts, complete papers, and presenter biographies from the 1995 Computer Assisted Language Instruction Consortium (CALICO) annual symposium on computers and collaborative learning. Presented topics included courseware, preconference workshop reports, and conference papers presented, including guest speaker papers. Preconference workshops discussed HyperCard, SuperMacLang, and the Defense Language Institute Template Library. The Courseware Fair included presentations on various ongoing projects and programs in computer assisted language learning (CALL). (Contains numerous references.) (NAV)

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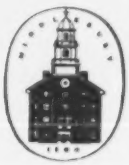

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MIDDLEBURY, VERMONT
JUNE 19–23, 1995

PROCEEDINGS OF THE
COMPUTER ASSISTED LANGUAGE INSTRUCTION CONSORTIUM
1995 ANNUAL SYMPOSIUM
"COMPUTERS & COLLABORATIVE LEARNING"

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Julia Wetzel — thanks to ya!

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PROCEEDINGS OF THE COMPUTER ASSISTED LANGUAGE INSTRUCTION CONSORTIUM
1995 ANNUAL SYMPOSIUM "COMPUTERS & COLLABORATIVE LEARNING"

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INTRODUCTORY REMARKS

FRANK L. BORCHARDT, DUKE UNIVERSITY

About twelve years have intervened since the founding of CALICO. That seems a long time for a population to maintain a "pioneer" status. The CALICO membership does seem to fit the bill. With a few bright exceptions world-wide, it is still far from ordinary to find learning labs equipped with networked multimedia machines running some or any of the dazzling applications one can read about in these pages. The pioneer status of the CALICO membership has in part to do with starting out in advance of others and staying, relative to others, in a position of leadership. But it has also to do with problems external to both the technology itself and the people who apply the technology: (to quote CALICO '91's after-dinner speech, *CALICO Journal* 8, 4 [June 1991], 17-24.) "the [problems] are psychological, sociological, and political. And how many of us are equipped to deal with them?

- Psychological: Has anyone prepared us to deal with the teacher who takes one look at a keyboard and freezes, fearing to set off an MX missile and World War III with the first keystroke?

- Sociological: How do we deal with the attitude, 'the secretary uses computers, therefore I don't,' or conversely, 'Why does Smith have a computer and Jones none?' whether either of them needs one or not?

- Political: How about the movement of resources (and clout) around an organization, away from certain people and toward others? It is one of our weaknesses as a species to watch that movement with great trepidation, especially if the movement is away from us and toward someone else. Good and persuasive reasoning is usually far from sufficient to deal with that. And who has trained us in the wisdom required to shepherd those reallocations with a minimum of pain? "

One of our presenters (Scott Despain) notes in passing the fundamental uncertainty afflicting any and all research efforts on the effectiveness of educational technology: in one moment the scientific evidence begins to show what intuition, testimonials, and common sense have known for years–given the peculiar and disparate kinds of learning that go on in language acquisition, new technology almost always brings performance improvement; in the next moment, the question arises, quite properly, is it the technology, or is it the new enthusiasm or the new methodology or the new content that make the positive difference? Hard to say.

For such psychological, sociological, and political reasons as are cited above, new educational technology is constantly rebuked for an absence of conclusive scientific research. Are "tried and true" methods of instruction ever based on conclusive scientific research? The actual fact of the matter is that scientific research is constantly underway, either independent and at the focus or embedded in larger projects: consider the presentations here by Devis Asay, Margaret Beauvois and Beth Secrist, Jack Burston and Monique Burston, Graham Chesters and June Thompson, Dorothy Chun and Jan Plass, Michelangelo Conoscenti, Bill DeSmedt and Willard Daetsch,

Scott Despain, Saeko Komori, Hsien-Chin Liou, Lydie E. Meunier, José Noijons, Jim Pusack and Sue Otto, Sofus Simonsen and Joseph F. Steffen. There may be proportionally as many "assessment" presentations this year as there were in '93, the Year of Assessment.

The struggle to assess fairly continues, even in the face of doubts as to whether fair assessment has as much to do with the employment of educational materials as at first meets the eye. Content, methodology, and delivering technology may have something to do with why educational materials are chosen in the first place. Whether instructional materials are actually used, however, may well be determined by entirely different factors. Observation over time suggests that for educational materials actually to be used, some combination of certain basic conditions and procedures must prevail. Without these conditions and procedures the materials will eventually gather dust on the shelf or euphemistically to be consigned the status of "voluntary," "reference," or "auxiliary." For the academic environment, in competition for time with who knows how many other courses, these conditions and procedures are:

S M A C Testing

- the platform teachers or the coordinator or the administrator actually have or feel they have a personal **stake** in the success of the material;

- performance is **monitored** (either electronically or by "signing in," not so much "teacher is watching," as "does teacher actually know I'm doing this?");

- **assignments** in the material are explicit ("your regular computer assignment is . . ." not "oh by the way, be sure to do the computer exercises,") and specific ("unit so-and-so, section so-and-so to so-and-so," not "whatever they are");

- assignment content must be closely **coordinated** with the rest of the learning;

- performance is **tested** (content must be specifically addressed along with all other learning materials in the testing mechanism, whatever it may be).

S take
M onitoring
A ssignment
C oordination
T esting

CALICO has never been prescriptive when it comes to adhering to the topic of the year; this year, Collaborative Learning. The reason is quite simply that CALICO exists to serve its membership and needs to conform to the agenda of the membership and not the other way around. Several presentations are keeping alive the fascinating discussion begun by Sallie Gordon at the '94 "Human Factors" conference at Flagstaff: Michelangelo Conoscenti, Thomas Thibeault, Richard Waters. Several others are following up Gerry Ervin's Internet keynote address, keeping us abreast of problems and successes there: Richard Kunst and Ted Bebenek, Carolyn

Fidelman, Kazumi Hatasa, Atsushi Fukada, and Peter Henstock, Richard Sutherland, Keith Anderson, and Donna Van Handle. If we had known, this year might have been declared the "Year of Audio." Many presentations make focussed use of this feature of multi-media, so central to the language learning enterprise; in speech recognition: Philip Battaglia, Jared Bernstein, Stephen LaRocca; in phonetics: Philippe Delcloque; using audio as data: Roger Anderson, Edna Amir Coffin, Brian Gill, Erika Gilson, George Henry and Robert Zerwekh, David Herren, Philip Hubbard, Christopher Jones and Mathew McNally, Ania Lian, Gail Robinson-Stuart and Bob Hoffman, and Reinhard Schulz, and Virginia Scott and Jim Noblitt.

Technology-learning integration characterizes the presentations of Donald Becker, Jan Brouwer and Ana Gimeno-Sanz, Charles Bush, Michael Bush, Robert Fischer, Nina Garrett, Lori Thomas, and Maria Vouras, Debra Hoven, Scott Hart, R. Kent Wood, and Ramon Reiser, Anita and Jeff Knisbacher, John Lackstrom, Peter Lafford and Barbara Lafford, Renée Meyer, Emery Tetrault, and Alan Stewart, Mohsen Mahdavi-Hezaveh, Stacie Hibino and Gonzalo Silverio, Masatoshi Sugiura and Shuji Ozeki, Rodney Tamblyn, Finley Taylor, with special angles represented by Glyn Holmes (*corpora*), Randall Jones (testing), Saeko Komori (Kanji), and Andrew Lian (dialoguegenerators), and Alice Slaton and Claire Saint-Léon (video).

Even if many presenters decided on presenting their year's work, a decent proportion has come around to some experience with collaborative learning, some on the reasonable, commonsensical level—Willard Daetsch, Joan Jamieson, Peter Heinz and Jill Crotty, Mary Ann Lyman-Hager, Peter Mason, some in the stricter sense articulated by such researchers and practitioners as Kenneth A. Bruffee (*Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*. Baltimore: Johns Hopkins University Press, 1993) – Lydier E. Meunier, Kathryn A. Murphy-Judy, Karen Schairer and her teammates, and Miriam Schcolnik. When the teacher centered, or modified teacher centered classroom still works or appears to work, there may well be little reason to make radical and fundamental changes. However, there are cases where the traditional classroom works less and less well or fails altogether. There serious application of "Collaborative Learning" strictly construed has often enough proven to be salvation. People who have experienced the radical turn around of a surly, uncooperative, "passively resistant," class of students by collaborative learning will never doubt again. Surely all the revolutions which await this and the next generations of teachers and students will be located somewhere between educational technology and collaborative learning. As usual, CALICO got there first.

Frank L. Borchardt,
Executive Director, CALICO

PRECONFERENCE WORKSHOPS

JUNE 19, 1995 · SUNDERLAND LANGUAGE CENTER & VOTER HALL

HyperCard for Language Learning

Conducted by Claire Bradin, Thomas Browne, and John Lackstrom

HyperCard™ is an Apple Macintosh authoring program important for the relative ease with which it enables teachers to create custom Computer Assisted Language Learning (CALL) applications for their students.

This workshop will give participants task based, hands-on experience in creating **HyperCard** stacks for language learning. Teachers will learn to produce computer applications which incorporate text, graphics, sound, and video and thus enhance the variety of materials offered to their students.

Participants should be familiar with the use of a mouse, but no prior knowledge of **HyperCard** will be assumed. A series of incremental tasks will involved creating new cards, making buttons, resizing and naming objects, creating, formatting and resizing text fields, playing sounds, copying and pasting graphics, and inserting **QuickTime** movies. These tasks will be carefully explained in detailed handouts. The handouts will be available both in hardcopy and electronic form.

Various templates which each address a different aspect of language learning — a grammar exercise, a vocabulary module, and a listening task — will be provided. Participants will make use of these templates to guide them through the activities of the workshop and provide them with the means for completing their own projects. To this end, each participant should bring two 3.5" high density floppy diskettes.

The workshop presenters are well experienced in dealing with novices to computers and in conducting sessions of this type.

Claire Bradin is a doctoral student at Michigan State University, where she is a CALL Coordinator for the English Language Center and Graduate Assistant for the Language Learning Center. She frequently conducts workshops on CALL for faculty and students.

*Thomas Browne is Director of the Humanities Learning Center at Macalester College in Saint Paul, Minnesota. He started working in **HyperCard** in 1989, designing a series of 15 **HyperCard** stacks to accompany the PICS videodisc Tele-Douzaine. Subsequently, he has created a series of lab management stacks for virtually all necessary record keeping, a self building question/multiple choice answer stack for people who know nothing about **HyperCard**, a second language vocabulary builder adaptable to any language, and is currently working on multimedia projects in German, Spanish, and Russian.*

John E. Lackstrom is Professor of Linguistics, Spanish, and English as a second language at Utah State University. Professor Lackstrom has a Bachelor's degree in Spanish, a Masters of linguistics and a Ph.D. in linguistics from the University of Washington. He teaches courses in linguistics, applied linguistics, Spanish applied linguistics, Spanish language, and English at both the graduate and undergraduate levels. Professor Lackstrom's current interests include language teaching methods and computer assisted language learning. He is active in TESOL and in the local regional affiliate of TESOL.

Getting Started with SuperMacLang

Conducted by Judith Frommer and Otmar Foelsche

This workshop will provide an introduction to **SuperMacLang (SML)**, a new user friendly authoring system for creating multimedia learning materials in foreign languages (including less commonly taught languages if the proper system is installed) on the Macintosh. Inspired by and including many of the features of the original **MacLang** authoring system, the new **SuperMacLang** authoring system includes features that take advantage of the capabilities of today's computers. The new system is flexible, offers an additional column matching format, allows authors to use multiple fonts and text styles, and

provides for creation of tests. The program collects data on student performance that can be useful in research.

The first part of the workshop will consist of a demonstration of **SuperMacLang** student activities in several languages including items using all four possible formats: fill-ins, column matching, jumbles, and multiple choice. We will show alternate answers, comments, and anticipated incorrect answers. Contextualized activities that use sound documents and **QuickTime** movies will be included. In this part, the end product is explained in order to facilitate the participants' understanding of the workings of the authoring system which will be presented next.

The author mode will be presented once quickly and then more carefully, with participants executing each move before going on to the next. That is, the whole group will engage in the entire authoring process once, in English, before each participant begins to author independently. As they work, participants will be able to switch instantly into student mode to check on entries. When this activity is completed, participants can work independently to create their own original activity. The will be able to use already existing **QuickTime** movies and sound documents, or they can bring their own with them.

It is expected that everyone will be able to leave the workshop having completed at least one **SuperMacLang** activity.

NOTE

SML is the result of cooperation between Harvard, Dartmouth, and Yale; development was funded by the Consortium for Language Teaching and Learning and the Charles F. Culpeper Foundation. The current **SuperMacLang** authoring system is different from the original **MacLang** and does not have file compatibility with the previous version.

*Judith Frommer developed the original **MacLang** authoring system. She is Coordinator of Language Instruction in the Department of Romance Languages at Harvard University, where she teaches courses in French and language pedagogy. She has written articles on technology and language learning and has developed interactive videodisc materials.*

*Otmar Foelsche, Director of Humanities Resources at Dartmouth College, has developed numerous software programs for foreign language instruction, including **annotext, dh glossaries**, and the **Hanzi Assistant**. He has given many workshops and presentations on language learning and technology.*

The DLI Template Library — A Creative Courseware Development Option for Busy Foreign Language Teachers

Presented by Steven Koppany

The multimedia revolution is raging, but many foreign language teachers are still not convinced that they should actively participate in it. The DLI Template Library was designed to make multimedia based interactive lesson development appealing to foreign language teachers, who have little time for and/or interest in computer programming. The Defense Language Institute (DLI) presenter will use this library to guide participants through the lesson creation process; discuss related methodological considerations; show model lessons assemble from the library; and assist each participant in developing a foreign language lesson by the end of the workshop. Handouts listing the activity types included in the template library will be made available.

Participants are encouraged to bring to the workshop authentic reading and/or listening materials to be used during the individualized lesson design segment of the workshop. While extensive programming experience is not required, basic familiarity with the PC **Windows** environment and word processing is necessary in order to get the most out of this workshop.

Steve Koppany is one of the authors/developers of the DLI Template Library. He has taught in foreign language classrooms and has extensive experience in foreign language methodology, technology, and computer based authoring training. He has given presentations at ACTFL, TESOL, CALICO, and BILC conferences, and has conducted workshops around the United States and abroad.

CALICO COURSEWARE FAIR

JUNE 20, 1995 · MCCULLOUGH GYMNASIUM · MIDDLEBURY COLLEGE

BYU Russian Courseware: An Update

Demonstrated by Devin Asay

This demonstration will present enhancements to the software first shown by the author at CALICO '94. It will also include hands-on demonstrations of the **Russian Vocabulary Tutor**, a multimedia tutorial that will be featured in the author's presentation later in the conference.

Devin Asay holds an M.A. in Russian from Ohio State University, where he began developing CALL software in 1986. He works now as a CALL developer at Brigham Young University.

Digital Video and Speech Recognition in Sample Spanish Exercises

Demonstrated by MAJ Philip F. Battaglia

Digital video allows us to easily transport lessons via CD-ROM or over the network that connects faculty and students. Current digital video technology has limitations, but it is sufficient to provide the sights and sounds of the target language.

CPT Philip F. Battaglia, Assistant Professor of Spanish and Associate Director of CTELL.

Speech Technology in Language Education

Demonstrated by Jared Bernstein

Speech technology is assuming a larger role in computer based language education. This courseware fair demonstration presents the elements of speech analysis, coding, synthesis, and recognition as they apply to multimedia language education. These technologies will be demonstrated in the context of second language teaching and testing.

Jared Bernstein is head of the Language Systems Group at Entropic Research Laboratory, Inc., and Consulting Professor of Linguistics at Stanford University. He has over 20 years experience in speech technology R&D.

The Foreign Language Troubleshooters with Digitized Full-Motion Video

Demonstrated by Jay Bodine

The **Foreign Language TroubleShooters** is a template authoring system allowing an "easy" computerization of language exercises. Coupled with full-motion video capabilities (MPEG/ ActionMedia II) currently under OS/2, the program allows perhaps the easiest available production of sophisticated exercises, including those based upon digitized video. The program compares student responses to the correct answers (according to word order and characters, particularly accents and umlauts) and guides the student to correct the wrong aspects of his/her response.

*Jay F. Bodine, Associate Professor of German at Colorado State University, is principal author of the **Foreign Language TroubleShooters** — computerized exercises published for ca. 15 text books (German, Italian, Spanish), with more in progress (English), and driver programs for **DOS**, **Windows**, and Macintosh.*

Computer Adaptive Placement Test for Japanese

Demonstrated by Jack Burston and Monique Burston

The **Japanese Computer Adaptive Test** is intended to facilitate student placement in university level language courses. It functions essentially like a language proficiency interview, presenting harder questions in reaction to correct answers and easier ones subsequent to incorrect replies. As the range of test item difficulty is narrowed to match a student's estimated ability, accuracy of prediction increases. Consequently, only a fraction of potential test bank questions actually need to be presented to determine ability level with reasonable confidence.

Jack Burston is Senior Lecturer in French, Department of Romance Languages, Monash University. He teaches a post-graduate course in CALL and supervises Ph.D. and M.A. candidates in this area.

Monique Burston is Associate Professor in French, Department of French and Italian Studies, The University of Melbourne. She is co-author of a number of computer assisted French programs.

Montevidisco

Demonstrated by Charles Bush

Montevidisco is an interactive video application intended for intermediate Spanish students. It combines language enrichment with elements of role-playing games as the student plays the role of someone visiting a hypothetical city in Mexico, interacting with native Spanish speakers in native situations via video segments. Earlier versions of **Montevidisco** used laserdisc as the video source, but this version utilizes **QuickTime** digital video and can run completely from a single CD-ROM disc.

*Charles D. Bush. Senior Research Consultant/Macintosh Specialist, Brigham Young University Humanities Research Center. He has done extensive programming and CAI software development using **HyperCard** on Macintosh computers.*

Various Programs Developed by the TELL Consortium

Demonstrated by Graham Chesters and June Thompson

A selection from 40 programs, ranging from packages designed for self access grammar practice to multimedia packages allowing sound recording facilities will be demonstrated. Programs fall into three strands: those designed for beginner/elementary students, for integration with existing courseware; those emphasizing exploitation of authentic foreign language resources; those concerned with language handling, including translation aids. The number of programs demonstrated will depend on the equipment available and on the interests of viewers.

Graham Chesters and June Thompson are the Director and Manager respectively of the UK's national Computers in Teaching Initiative Centre for Modern Languages at the University of Hull, lead site for the TELL Consortium. The Centre's publications include the ReCALL Journal and the ReCALL Software Guide.

Project FLAME: Multimedia and Hypermedia Language and Culture Applications

Demonstrated by Edna Amir Coffin, Gonzalo Silverio, and Stacie Hibino

We will demonstrate various segments of works completed and in progress of hypermedia and multimedia applications in language and culture. Demonstrations will include sample lessons from the *Buried Mirror* series (Spanish and English), *Good-Bye Summer* (Russian), *LernExpress* (German), *Encounters* (Hebrew), *Mexico Vivo* (Spanish), and *Quinze Minutes* (French). Instructional designs will be demonstrated, including the Teacher's Partner, the Learner's Partner, the Exploratory Mode, and the Creative Mode.

Dr. Edna Amir Coffin is a Professor of Hebrew literature and linguistics at the University of Michigan. Presently, she is involved in the instructional design and development of hypermedia and multimedia language and culture applications.

Gonzalo Silverio is a doctoral candidate in Spanish Literature, and is currently authoring and coordinating a hypermedia application based on The Buried Mirror by Carlos Fuentes.

Stacie Hibino is a doctoral candidate in computer science. She is the main developer of tools and designs for the FLAME multimedia applications.

R.E.AD. (Reading Easily for Adults): A Learner Centered Courseware with a Collaborative Approach

Demonstrated by Michelangelo Conoscenti

The demonstration will focus on innovative techniques that have been developed and used to obtain communicative language learning using "only" authentic written materials. It will also show system flexibility in handling open ended questions and how learner and courseware interaction is achieved.

Michaelangelo Conoscenti is the Director of the Language Center at the University of Turin, Italy. He has been a consultant for the Commission of the European Communities as a specialist on CALL. He has published several

articles on CALL and designed courseware used in various universities. He is responsible for two European based research projects on CALL.

¡Arriba Audio!

Demonstrated by Scott Despain

¡Arriba Audio! (CD-ROM for **Windows** and Macintosh) represents the near future industry-wide in ancillaries. It is a computerized mirror image of the lab manual that accompanies the beginning Spanish text **¡Arriba!**, published by Prentice Hall. All activities, graphics, audio and recordkeeping are computer generated. The program provides immediate reinforcement, repetition and review, fosters collaborative learning, maintains all records and is a valuable research tool for second language learning.

Scott Despain coordinates lower division Spanish instruction at NCSU. He is completing his Ph.D. from Indiana University-Bloomington in the Instruction of Hispanic Language and Literature with a minor in CAI.

The Agora Language Marketplace

Demonstrated by Carolyn Fidelman

The Agora Language Marketplace Web and Gopher Service is a solution to the appropriate placement of information that markets to members of our profession. Agora is a virtual exhibit hall and a location for other professional information. The branch of Agora known as the Agora Publishing Group provides CALICO members whose work has not been picked up by a major publisher with the opportunity to market their materials efficiently and inexpensively.

Carolyn Fidelman is a French instructor specializing in nonverbal communication and designer/producer/programmer of multimedia materials in language. She is an independent producer for IBM and others, and is Editor-in-Chief for the Internet Buyers Guide, Agora Language Marketplace.

Libra: A Multimedia Authoring System for the Macintosh

Demonstrated by Robert Fischer, Michael Farris, and James Champion

We will demonstrate how faculty authors can produce multimedia lessons by using **Libra***, an authoring system for the Macintosh. The demonstration will include showing how to use **Libra**'s authoring tools to create advance organizers, listening comprehension questions (with appropriate feedback), hyperactive text displays, and dictionaries. We will also exhibit sample lessons in French and Spanish created by means of the authoring system.

**Supported by a grant from the Fund for the Improvement of Postsecondary Education.*

Robert Fischer is Professor of French and Linguistics at Southwest Texas State University. His primary research interests lie in Applied Linguistics and CALL/multimedia design issues

Michael Farris, Director of Media Services at Southwest Texas State University, has over 20 years of experience in education computing. He played a major role in the Timed-Shared Interactive Computer Controlled Information Television project (TICCIT) and is presently involved in the development of hypermedia and multimedia authoring tools.

James Champion is Professor of Spanish and Linguistics at Southwest Texas State University. His current research interests include computer applications in Spanish linguistics and multimedia programs.

A la rencontre de Philippe: An Interactive Story

Demonstrated by Gilberte Furstenberg

This demonstration will provide the audience an in-depth look at the many features of the program: its linguistic tools, its interactive tools, its varied forms or interactivity, its two modes (teacher and student modes), its many components (the story, the multiple function index, the video album, etc.). It will also highlight, along the way, the concept behind the program, its learning goals, and the new roles it generates for the student and the teacher.

Gilberte Furstenberg, Senior Lecturer in French at MIT, is the author of A la rencontre de Philippe, a multimedia program which has won national and international awards.

Intermediate French: Task and Topic

Demonstrated by Brian Gill

The program runs under **Windows** and uses sound and text in a hypermedia environment. It provides grammar instruction, exercises to improve the use of dictionaries and the ability to write up assignments and print them out.

*Brian Gill teaches French at the University of Calgary (Canada) and co-edits the Alberta Modern Language Journal. He has produced **ANALYSE**, a program to teach grammatical analysis, and given papers on CALL at Canadian and international conferences.*

Learning Aids for the Less Commonly Taught Languages

Demonstrated by Erika Gilson

This demonstration will include several non-commercial programs in use for Turkish, among them **VocabBuilder**, a powerful memorizing aid which can be used for any language level and any language using a right to left writing system, and adaptation of a commercial program, the **Rosetta Stone**.

Erika H. Gilson, Lecturer of Turkish at the Near Eastern Studies Department of Princeton University, is interested in the development and delivery of effective models for instruction in the Less Commonly Taught Languages.

NEXUS Lab Project

Demonstrated by Scott Hart, R. Kent Wood, and Ramon Reiser

The NEXUS lab at Utah State University's Department of Instructional Technology has been building experimental language training software for nearly four years. Many of these software tools are available at no cost to participants at the courseware fair. NEXUS projects to be demonstrated include the CID tools, **NEXUS-LEX**, **Videodisc Barcode Generator**, **Talking Storybooks**, **Talking Visual Dictionarys**, presentation tools, and location and converation simulator software.

Scott A. Hart is a doctoral student, instructor, and research Co-Director at Utah State University; A graduate of the Defense Language Institute (DLI) and winner of a national educational programming competition.

R. Kent Wood is Professor and Coordinator of the Laboratory for the Experimental Study of Instruction (LESIN), Department of Instructional Technology at Utah State University.

Ramon Reiser is a Research Associate with the NEXUS Research Group in the Department of Instructional Technology at Utah State University. He is an editor of NEXUS-LEX, a Chinese-English Dictionary and hasworked as a military instructor of interrogation and Mandarin Chinese.

Japanese Freeware from Purdue University

Demonstrated by Kazumi Hatasa, Atsushi Fukada, and Peter V. Henstock

A series of Japanese freeware have been implemented in **HyperCard**. **Hiragana & Katakana** introduces two sets of Japanese syllabaries. **World Geography** gives students practice in reading Katakana using names of different countries. **AutoGloss/J** automatically generates glossary lists from Japanese text. It makes a use of a public domain bilingual dictionary called "edict."

Kazumi Hatasa is an Associate Professor of Japanese at Purdue University. He has published articles in CALICO Journal and developed a series of Japanese freeware such as Hiragana & Katakana, World Geography.

Atsushi Fukada is an Assistant Professor of Japanese at Purdue University. He developed the Computer-Assisted Technical Reading System (CATERS) to help learners read technical Japanese.

*Peter V. Henstock is a Ph.D. candidate in Electrical Engineering at Purdue University. He developed freeware **AutoGloss/J** for automatic generation of glossary list from Japanese text.*

Using Dialogues

Demonstrated by Christopher M. Jones and Judith Frommer

Dialogues: les Français parlent d'eux-memes is an intermediate level, interactive videodisc package which presents an integrated approach to the teaching of culture, literature, and language. The hypermedia package includes dossiers on two specific cultural topics — *La famille* and *Les femmes*. Each dossier consists of thirty minutes of interviews videotaped in France with French speakers of varied ages, ethnic backgrounds, social classes, and regional origins, as well as annotated texts — literary excerpts and articles from the contemporary French press — related to the topic, and a computer interface that involves the student interactively with the content.

Christopher M. Jones is Director of the Language Learning Resources Center and Senior Lecturer in French at Carnegie Mellon University. His professional activity is divided between the study of French culture and involvement in a variety of multimedia development projects.

Judith Frommer developed the original ***MacLang*** *authoring system. She is Coordinator of Language Instruction in the Department of Romance Languages at Harvard University, where she teaches courses on technology and language learning and has developed interactive videodisc materials.*

QTKanji: Learning How to Draw Kanji with QuickTime

Demonstrated by Saeko Komori

QTKanji is a **HyperCard** based kanji learning program. Basic kanji characters are digitized as **QuickTime** movies. The purpose of this program is to show students how to draw each kanji. Kanji is usually taught by using numbers and arrows to show the stroke order, but the **QTKanji** can show how each kanji is drawn by the brush strokes. The presenter will demonstrate **QTKanji** and show how it is used in her Japanese instruction with other programs.

Saeko Komori is Associate Professor of Japanese as a second language at Chubu University. She has been using computers in her classes since 1989.

WinCALIS 2.1

Demonstrated by Richard Kunst and Fred Jacome

Multimedia demonstration of **WinCALIS 2.1**, an internationalized, multilingual Unicode™ ISO 10646-compliant CALL delivery system for Microsoft **Windows**. Recent enhancements to the **WinCALIS** system, such as automatic buttons and hotspots, new media, and student answer tracking will be highlighted.

Richard Kunst is Research Associate at the Humanities Computing Facility, Duke University.

Fred Jacome is the Programming Manager at the Humanities Computing Facility, Duke University.

Three HyperCard Templates for Quick Vocabulary Exercises

Demonstrated by John E. Lackstrom

"Three **HyperCard** Templates" is a demonstration of the authoring, practice and competition modes of CALL software integrated into the core content of a college-level Spanish for Business class. **HyperCard** templates for three styles of exercises enable the author to quickly produce **HyperCard** study and review stacks incorporating material generated by student/instructor collaborative activities.

John E. Lackstrom is professor of Linguistics, Spanish and English as a second language at Utah State University. His current interests include language teaching methods and computer assisted language learning.

New Mac and Windows Versions of the BYU Computerized Adaptive Placement Exams (CAPEs)

Demonstrated by Jerry Larson

DOS versions of computerized adaptive placement exams for French (**F-CAPE**), German (**G-CAPE**), and Spanish (**S-CAPE**) produced at Brigham Young University have been in use at several institutions for several years now. We have recently completed corresponding Macintosh and **Windows** versions of

these tests in addition to a new test of Russian (**R-CAPE**). Some of these new tests will be demonstrated. Also, participants at the Courseware Fair are invited to come by the table and try out any of the tests.

Jerry W. Larson, Ph.D., University of Minnesota, is Director of the Humanities Research Center and Professor of Spanish Pedagogy at Brigham Young University.

Encore et Encore: Reviewing Language Structure via Multimedia

Demonstrated by Mary Ann Lyman-Hager

Instructors at Penn State have developed a multimedia template to enhance structural competence of language learners while they are engaged in listening to music and digital audio. **Encore et Encore** is one such program developed from the template. The template is also used in teaching reading and has developed from the **Une Vie de Boy** prototype. Both templates (listening and reading) will be shown.

Mary Ann Lyman-Hager is Director of the Language 3 Initiative, a project which won the Provost's Award for Collaborative Teaching at Penn State. She is the Coordinator for Instructional Computing in the College of Liberal Arts and an Assistant Professor of French.

Sharing Hypermedia Tools and Resources for Language Teachers: *Stack Network Project* CD-ROM

Demonstrated by Masatoshi Sugiura and Shuji Ozeki

Stack Network Project is promoted by the presenters to make hypermedia tools and resources including digital movies available on a CD-ROM for language teachers.

HyperLibrary provides a hypertext-type reading environment with on-line references. *HyperComp* is created for students to write compositions based on the topics in the form of animation. The writing process is automatically recorded. With *QuickDialog*, students learn typical situational expressions through role-playing activities utilizing digital movie clips.

Masatoshi Sugiura, an Associate Professor at Nagoya University, Japan, has created CALL programs including HyperLibrary, HyperComp, Quick Dialog, HyperPictureDictionary, HyperDiction, and HyperJP.

Shuji Ozeki, an Associate Professor at Chubu University, Japan, has created CALL programs including HyperLibrary, HyperComp, QuickDialog, and WritingPad.

Creating a Digital Language Learning Lab

Demonstrated by Rodney Tamblyn

A practical demonstration of software and hardware developed for use in University of Otago's computer based language learning labs. A variety of software packages developed at Otago University will be demonstrated. In addition, hardware elements (circuit boards, student headset interface electronics, etc.) used in the audio/video distribution system developed for these labs will be available for inspection/demonstration.

Rodney Tamblyn is the CALL Consultant at the University of Otago. He studied music (piano) at Otago and later at the University of California, Davis, before taking up his present position in 1992.

SmarText: Multimedia Hypertext Authoring System

Demonstrated by Thomas Thibeault

SmarText is a multimedia hypertext authoring system. It allows language instructors to enter text and gloss individual words or phrases in order to assist their students' comprehension. Various kinds of information can then be attached to the word or phrase such as definition, phrase translation, grammatical note, sound resource, graphic, separate module or **QuickTime** movie. Language students can then read more challenging texts independently with access to additional context sensitive information useful for full comprehension.

Thomas Thibeault (Ph.D., Universität Salzburg) is Director of the Language Media Center at Southern Illinois University at Carbondale. He has been involved in CALL courseware development since 1984.

A Comparison of French Romanesque and French Gothic Churches in HyperCard

Demonstrated by Nicole Vaget

This is an eight megabyte **HyperCard** stack in Medieval Religious Art, which gives students an opportunity to learn when, where, and how Romanesque and Gothic churches were built. It consists of three parts: (1) a vocabulary lesson in French, (2) a presentation of the characters of Romanesque style with examples, (3) a comparative approach to the development of Gothic style with examples. It is intended to be used for class presentation as well as used by the students in the lab. By condensing information which are otherwise scattered in the Art library and in the main library, this project intends to save students' footwork while boosting their curiosity.

Nicole Grangeat-Vaget, Ph.D., is Associate Professor of French at Mount Holyoke College. Dr. Vaget's current research interests include multimedia computer development applications in French civilization and Francophone Studies.

AN AUTHENTIC DISCOURSE CENTERED MULTIMEDIA FOREIGN LANGUAGE CURRICULUM: A CASE STUDY

ROGER ANDERSEN, UNIVERSITY OF CALIFORNIA AT LOS ANGELES

ABSTRACT

Most multimedia foreign language courseware supplements the existing curriculum. Many teachers, however, do not know how to fit these modules into their existing curriculum. We are researching one solution to the lack of a clear link between the multimedia courseware and the existing curriculum by developing a new curriculum around the courseware. The UCLA Authentic Discourse Project has developed a complete first-year authentic discourse centered multimedia curriculum for the teaching of Quechua, the language of the Incas and the indigenous American language with the largest number of speakers (8-11 million), as a model for similar curricula for other languages and cultures.

In 1986 Roger Andersen outlined the Authentic Language Plus Model for foreign language instruction in a report to the National Security Agency, based on his earlier research on authentic discourse centered curriculum development. Beginning in the Fall of 1989 we implemented this model in a new project funded by the U.S. Department of Education by sending a film team to Bolivia to film thematically related scenes of natural spoken Quechua discourse. We produced a high quality two-hour film containing twenty scenes from our film footage, from which we pressed four 30-minute laserdiscs. We also developed the basic computer interface, using **Multimedia ToolBook.**

From January 1992 through June 1994 we piloted and evaluated different versions of our material in first and second year classes, developed a new curriculum around the film. We piloted this new curriculum in the summer 1994 intensive first-year Quechua course, after which it was evaluated, revised and expanded. It is being reevaluated during the 1994-95 academic year as we design the second-year course. This presentation focuses on the theoretical and philosophical underpinnings of the curriculum, illustrated with video clips from the summer and academic year courses.

PRESENTER'S BIODATA

Roger Andersen is Professor of Applied Linguistics at UCLA and Director of the UCLA Authentic Discourse Project, and specializes in cross linguistic research on second language acquisition and on natural spoken discourse. He began the study of natural spoken discourse in 1972, using ethnographic fieldwork methodology to study sociolinguistic variation in Papiamentu, the native language of Curaçao. His second language acquisition research began in 1974. Since 1989 he has directed a team at UCLA that is developing a full two-year foreign language curriculum centered around natural spoken Quechua discourse filmed in Bolivia, to serve as a model for similar curricula for other languages and cultures.

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BUT DOES IT WORK?: EVALUATING THE EFFECTIVENESS OF A MULTIMEDIA VOCABULARY TUTOR

DEVIN ASAY, BRIGHAM YOUNG UNIVERSITY

ABSTRACT

Although CALICO has been around for over 10 years and the use of computer assisted language learning (CALL) software is well established at many educational institutions, there is still very little research available on how effective such software is in helping learners actually acquire and retain language skills. The author has developed a simple vocabulary tutoring program aimed at students of beginning Russian. The software employs concepts of hypermedia to present new vocabulary (arranged in a chapter format to correspond to the students' textbook), with the assumption that employing a variety of senses in vocabulary learning will aid in both initial acquisition and retention.

To test this assumption, the author is conducting a pretest–posttest comparison study with students in two separate beginning Russian sections. Both groups will take pretests covering the new vocabulary, but the test group will be assigned to spend a minimum amount of time per lesson using the tutorial software, while the control group will be given no special instructions for studying vocabulary. Posttests will be given to each group to determine success rates immediately after the study, then again following a several week gap to measure retention. The presentation will describe the study, its results and implications for CALL developers. A demonstration of the software will also be included.

PRESENTER'S BIODATA

Devin Asay holds a Masters of Arts degree in Russian Language and Literature from The Ohio State University. He began working on Russian CALL projects in 1986 as a graduate student and has been working full-time in CAI development since 1990, first at Ohio State University, and, since 1992, at Brigham Young University. He had developed hypermedia courseware for several languages, including Russian, Chinese, and French, working primarily with **HyperCard** and **Authorware Professional**. He has also been involved with overseeing development and evaluation of CALL projects at BYU.

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ERRORS, POSSIBLE ERRORS, AND PARSERS

ALAN BAILIN, UNIVERSITY OF WESTERN ONTARIO – CANADA

ABSTRACT

One of the more significant challenges in creating an instructional parser is to develop ways of identifying where an error actually takes place. At first glance the task would seem trivial: the parser should fail where the error occurs. In fact, all too often this is not what happens. The parser continues along exploring a possible parse and only later in the process of parsing fails because none of the possibilities leads to a well-formed structure. Human researchers, examining the sentence, often find it quite easy to identify the error which caused the parser to "fail." The question is how to get a computer to perform this task.

This paper will argue that the most effective way of addressing the issue is to have a clear conception of which errors are, in fact, possible. The number of conceivable errors is practically limitless; the kinds of errors that can actually be made by human beings are radically more limited. To the extent that the parser can be structured to take into account only the more limited set which can actually occur, the more efficient and accurate the error identification mechanisms can be.

In order to show how the conception of possible error can be incorporated in the software development process, the paper will discuss the issue in relation to a parser presently under construction at The University of Western Ontario. The intent will be to show how hypotheses about possible errors can directly influence the way in which the parser is constructed.

PRESENTER'S BIODATA

Alan Bailin (Ph.D., McGill) co-directs the writing center at The University of Western Ontario. He has participated in the field of ICALL as a writer, editor, and researcher. He is presently engaged in an ICALL research project entitled "A Computer-Aided Investigation of Writing Errors."

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DIGITAL VIDEO AND SPEECH RECOGNITION IN LANGUAGE LEARNING

MAJ PHILIP F. BATTAGLIA, UNITED STATES MILITARY ACADEMY

INTRODUCTION

The Department of Foreign Languages, at the United States Military Academy, has established an interactive language laboratory with true interactive audio capabilities. Expanding on previous equipment capabilities, we have created a new laboratory which allows students to practice both listening and speaking skills with immediate evaluation and feedback.

This new capability has been created in response to educational requirements generated by the various language instruction programs within the department. The baseline requirement of the new system is that it provide students with an evaluated aural and oral interaction which is available to the student without reference to an instructor. A key characteristic of any such system is that the instruction and drill be interesting enough that students will voluntarily use the system, thus increasing both the rate of language acquisition and long term learning. This requirement is fulfilled by application of both software and hardware learning tools.

HARDWARE

The good news about this new technology is that it does not cost much to make an interactive system. The basic requirement is a computer, 386DX or better with 8MB of RAM. The system requires an Aria speech recognition card. This sound card retails for about $150. Currently, we are using a 486DX33 with 8MB of RAM. This configuration allows us to incorporate digital video into the lesson. Digital video lets us produce inexpensive in-house video clips for the more exotic languages, such as Arabic, Chinese, and Russian for which there is very little off the shelf laser disc material. With a $300 VideoBlaster card we are able to digitize the video clips and incorporate them into the lesson. Recently, our department has purchased and received 60 Pentium 90 systems to outfit a new voice interactive digital laboratory. Preliminary tests with these new computers show us that we can capture video at quarter screen *without* the loss of any frames. The quality of the video is superb. Currently, we are planning to network the new computers and share the large digital files, perhaps even play the video from a central server over the network. We are planning more tests and experiments to fully realize the capability of these new systems. Eventually, we plan to put all our interactive lessons on CD-ROM disks for our students to use in their individual computers.

SOFTWARE

There are three components to the software package we use for multimedia instruction. The most important component is the instructional material. Currently we use several popular, off the shelf laserdisc video programs; *Destinos* for Spanish instruction, *French in Action* for French, *Velvet* for German and *Das Vidaniya Lyeto* for Russian. These products are proven instructional systems which present native speakers in an interesting situation. Students are interested in the videos as much for their storylines as for the language instruction, resulting in high rates of language acquisition and retention. We use Duke University's **WinCALIS** 2.0 program to write individual lessons and provide the interactive component of each lesson. **WinCALIS** 2.0 provides us with the capability of querying the students in a variety of formats, evaluating student response and giving the student immediate feedback to correct inappropriate responses or praise accurate responses. The final link is Aria Listener Card with its accompanying software which converts student oral response into digital inputs. **WinCALIS** 2.0 lessons are not altered by the use of sound inputs and lessons work as well when teaching objectives require that the student respond to questions by using the keyboard as an input device.

The **WinCALIS** 2.0 program allows the instructor to use either audio or screen questions, or both in combination. Instructors can vary the feedback to student answers and offer reinforcement of any point which may help the student to form a correct response. A typical lesson path might look like this:

1. After entering the lesson program, the student views a selected video clip. Ex: Clip 1 from *Destinos* Lesson 12 contains a description of Argentine government.

2. At the conclusion of the video selection, the student is asked an aural question.
¿Dónde vive el presidente argentino?

3. As the aural question is asked, an incomplete answer appears on the screen.
Vive en _____.

4. Three student responses are possible.

a. The student knows the correct response and speaks into the microphone *"Vive en la Casa Rosada."* The computer prints the correct answer on the screen responds to the student with audio and visual praise.

b. The student does not know the answer and responds with an incorrect utterance. The computer responds with a prompt:
1_ C_ _ _ R _ _ _ _ _.

The question is repeated.

c. The student does not know the correct answer and responds by saying *"ayuda."* In response for help, the computer will now play a short excerpt from the video clip which contains the correct answer. Then the question is repeated.

5. Having produced the correct answer, the student is now passed on to the next question or shown a new video and question sequence. In the *Destinos* 12 lesson, the student is asked another question before moving on to the next video clip. The same three responses are possible at each question.

At each stage of the lesson, the student is guided into responding correctly. The interactive video system presents both visual and audio cues to reinforce the material presented. The lesson author has control of cue presentation and so may vary the difficulty of the lesson's questions. In addition, the author can vary program feedback for each student response and reinforce a teaching point, praise correct responses or steer the student toward a correct response.

In the example above, we have used the Short Answer question format which is available in the **WinCALIS 2.0** program. Other available options are true/false, multiple choice, and cloze question formats. Each question may be written in a different format and exercise different aspects of the student's skills. Aural questions are easily recorded and stored as .WAV files. **WinCALIS** 2.0 allows the author to insert these files at virtually any point in the lesson.

WinCALIS 2.0 includes a variety of keyboard and character sets. Using these capabilities, USMA has written voice interactive video lessons in Russian, Arabic, and Chinese. Lesson structure and capabilities are not tied to any single language or teaching approach. The software and hardware package which we use at USMA allows us to present native speakers in realistic situations and demand that students interact with the video characters, exercising listening and speaking skills as well as the reading and writing skills which we could exercise using earlier interactive systems.

ACKNOWLEDGEMENT

This article was co-written by MAJ Mike Linehan. MAJ Mike Linehan was an Assistant Professor of Spanish at the United States Military Academy from June 1992 to December 1994. MAJ Linehan was an Instructor of the Basic Spanish course and authored several interactive video lessons as described in this article. Currently, MAJ Linehan is attending the Command and General Staff College at the School of the Americas at Fort Benning, Georgia.

PRESENTER'S BIODATA

Major Philip Battaglia is a 1983 graduate of the United States Military Academy. He received a Masters of Arts degree from New York University in 1991. Major Battaglia is an Infantry Officer and has served a variety of positions in tactical units to include Company Commander with the 82nd Airborne Division. Currently, he is serving as Deputy Director of CTELL in the Department of Foreign Languages at the Military Academy. He is also an Assistant Professor of Spanish and Course Director for the Spanish Basic course.

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CALICO BANQUET ADDRESS — THE EMPEROR'S NEW LANGUAGE LAB

OR

WHY THE FIRST PERSON ON EARTH TO BUY A DIGITAL WATCH MAY BE THE LAST PERSON ON EARTH TO USE MULTIMEDIA

JOHN BEAR, PH.D.

ABSTRACT

Increasingly, I feel my role in the world of computer assisted anything is not unlike the child who pointed out that the Emperor had no clothes. Three times over the last 15 years, I have looked at what many people were saying was a major new phenomenon, and found myself saying, "Hey, wait a minute. Maybe it isn't that way at all." My two books and various articles on this theme have, I think, been popular not just because they are contrarian, but because sometimes the emperor really is naked, and eventually people want to know that.

Those three phenomena are: (1) *the importance of programming* (in the 1970s, many experts were saying that success in the world of computers would depend on having programming skills); (2) *the importance of having a computer* (in the 1980s, the message was computers would soon be like the television and the wristwatch. Not only could everyone afford them, everyone would need to have one to keep up in the world. By 1995, the 3% of people on earth who use computers regularly are generally happy with them, but the other 97% are, by and large, doing OK too; (3) *the ubiquity of the Internet*: a massive tool with a useful but modest output: the billion ton hammer used to drive a ten penny nail; the electronic equivalent of the three hour movie that you would have enjoyed much more if it had been cut to 17 minutes.

For me, multimedia, that love child from the union of computers and collaborative learning, may well be "Hey, wait a minute..." #4. I appreciate that the topic is of more than passing interest to CALICO. Indeed, my informal content analysis of the titles of presentations this week show the five most often used words are *integrated, interactive, collaborative, multimedia*, and *hypermedia*. (Research topic: how often did those words appear in CALICO papers in 1983?)

Of course there are many people doing wonderful things in multimedia, but there are also those academic equivalents of aluminum siding salesmen, and sellers of double-lifetime dance courses. The biggest of the many flaws that I see (and many others will be discussed) is starting with the wrong question. People regularly ask, "Which computer should I buy?" when they should be asking, "Do I need a computer to accomplish my goals?" If, heaven forbid, I were hired to be the multimedia oriented collaborative learning specialist in the creation of a computer assisted *anything*, I guess my first, perhaps only question would be, "Given your budget, your personnel, and your goal of satisfying your clients by helping them reach these clearly defined (they are, aren't they?) outcomes, then what is the best way of getting there?" Somewhere on the continuum from a book to the Vulcan mind meld lies the best answer, which may or may not be computer assisted learning.

I appreciate being let through your Bozo Filter. And in the balance of this presentation, still (he said honestly) under construction as the abstract is due, I will say much more about that particular continuum.

PRESENTER'S BIODATA

Among John Bear's 26 published books are best-sellers in the fields of computers (*Computer Wimp: 166 Things I Wish I had Known Before I Bought My First Computer*) and education (*Bears' Guide to Earning College Degrees Nontraditionally*). He was once research director for Bell and Howell's educational division, and associate professor in the University of Iowa School of Journalism. As head of corporate communication for Midas Mufflers, he actually attempted to establish multimedia learning centers in Midas waiting rooms (and failed). He has been consultant to Xerox, General Motors, Britannica, the FBI, and The Grateful Dead. He did well as a guest on David Letterman and made a fool of himself on *Jeopardy* (and wishes it were the other way around). He is presently at work on three books (cooking, complaining, lotteries) and handles marketing for the computer assisted distance learning MBA of Heriot-Watt University, the largest MBA of any kind in the world (10,000 students).

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HIGH TECH – HIGH TOUCH: USING THE DAEDALUS INTEGRATED WRITING ENVIRONMENT IN THE FOREIGN LANGUAGE CLASSROOM

MARGARET BEAUVOIS AND BETH SECRIST, UNIVERSITY OF TENNESSEE AT KNOXVILLE

ABSTRACT

In our session, we shall demonstrate how we have used the local area network (LAN) to encourage student participation at all levels of the study of language and literature in classroom discussion as well as in reading and writing at The University of Tennessee, Knoxville. Descriptions of research studies, explorations of task assignment, reports of student feedback, and researcher observations will be included.

PRESENTERS' BIODATA

Margaret Beauvois, Assistant Professor, University of Tennessee, Department of Romance and Asian Languages, has been studying the use of the LAN to facilitate conversation/discussion in French for the past four years. She is currently Chair of a university wide project to encourage the use of this process in a variety of courses across the curriculum. The CANDID Project (Computer Assisted Networking for Discussion, Instruction, and Discovery) involves faculty at UTK in both teaching and in research of the effectiveness of computer mediated communication in the classroom.

Beth Secrist, Lecturer in Italian, Director Language Resource Center, Department of Romance & Asian Languages, University of Tennessee, Knoxville has been assisting Dr. Beauvois and other professors at UTK in implementing Daedalus software with their courses in association with the CANDID project. At the ACTFL 1994 conference, she presented a paper "The Daedalus Integrated Writing Environment: More than Computer Networked Discussion."

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BLURRING THE DISTINCTION BETWEEN PUBLISHING AND PROGRAMMING: THE VOYAGER EXPANDED BOOK TOOLKIT

DONALD BECKER, UNIVERSITY OF WISCONSINAT MADISON

ABSTRACT

This presentation will examine Voyager's **Expanded Book Toolkit**, a remarkable software package that to date seems to have gone largely unnoticed by CALICO members.

The **Expanded Book Toolkit** enables anyone to produce and distribute electronic editions exhibiting the same user interface familiar to purchasers of the literary works that have appeared as Voyager **Expanded Books**. My presentation will begin with a description of that interface, which combines features of traditional paper books (e.g., the ability to highlight words and phrases, to make marginal notes, and to dog-ear pages) with the searching and copying capabilities of word-processing software. I shall then demonstrate the impressive hypermedia capabilities of the **Toolkit** (capabilities that have been curiously underexploited in the **Expanded Books** that have thus far reached the market). These include the ability to "annotate" words or phrases with text windows, pictures, **QuickTime** movies, audio clips, **HyperTalk** scripts, and links to other sections of the text or to passages on an audio CD or a videodisc.

Since **Expanded Books** are **HyperCard** documents, their "pages" can be given all the features and functionality of the cards of any **HyperCard** stack. To illustrate this, I shall present **Expanded Book** versions of two articles dealing with **HyperCard** that I have published in the *CALICO Journal*. Unlike their printed counterparts, which merely described the use of **HyperTalk** externals (XCMDs and XFCNs) and CD audio in the construction of **HyperCard** stacks for language learners, my **Expanded Books** will actually incorporate operational versions of the relevant portions of the sample stacks discussed in those two articles. By blurring in this way the distinction between scholarly publishing and programming, **Expanded Books** constructed with Voyager's **Toolkit** can, I shall argue, help bridge the chasm that separates members of CALICO from their print-fixated colleagues.

PRESENTER'S BIODATA

Donald A. Becker is Professor of German and Linguistics at the University Wisconsin at Madison, where he has taught since receiving his Ph.D. in Linguistics from the University of Texas at Austin, 1967. His publications deal with German, Hindi-Urdu, phonological theory, CAI, **HyperCard**, and the computerization of South Asian scripts. A member of the Hypermedia and Foreign Character Font SIGs and current chairperson of the former, he has presented papers and/or demonstrated software at each of the last ten annual CALICO symposia and has published four articles in the *CALICO Journal*.

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SPEECH RECOGNITION EXPLAINED

JARED BERNSTEIN, ENTROPIC RESEARCH LABORATORY

[This paper is adapted from "Speech Recognition by Computer," by J. Bernstein and H. Franco, a chapter in N. Lass (ed.) (1995) Principles of Experimental Phonetics, St. Louis, Missouri: Mosby.]

INTRODUCTION

A machine that recognizes speech is a device that can take in a speech signal and produce a sequence of words that fairly represent what was said. In other words, a speech recognizer is a device that converts an acoustic signal into another form, like writing, that might be stored or used in some way. A person learning to take dictation in a new language needs to learn the vocabulary and the pronunciation of the language. Getting good at dictation takes a lot of practice hearing the language spoken. It helps to know what people are likely to talk about, how they express themselves, and what are the common constructions and idioms.

This same information needs to be learned by a machine in order for it to recognize the words in a stream of spoken English. The machine needs to know some English words and how they are pronounced; and the machine will perform much more accurately if it has some information about common word sequences in English and how they are typically used in some domain of discourse.

Figure 1 shows a schematic design of a speech recognition device. The acoustic signal is transduced by the microphone on the left and it is processed by the signal processor and search modules to the right until the best matching sequence of words is produced.

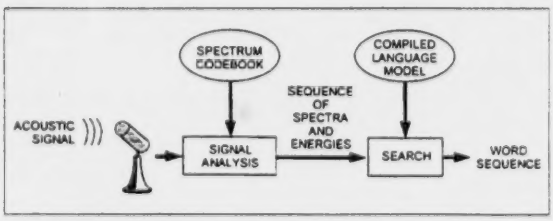

Figure 1. Component processes and static structures in speech recognition

The recognition system schematized in Figure 1 has two models; one of speech and the other of language. In the simple recognition system that we explain below, the model of human speech acoustics is just the spectrum codebook — nothing more than a list of spectral shapes that are commonly found in speech signals. The language model in our example system is a small finite state machine, that is, a graph that describes exactly which words can start an utterance, and which words can follow those words. For each word, the phones are given, and for each phone, there is a list of spectral shapes that are likely to be realizations of it. The signal processor and search modules find the elements in these models that are the best match for the incoming acoustic signal. These operations are explained below in the description of the design of a simple speech recognition system based on hidden Markov models (HMMs).

There are many types of tasks that could be accomplished with a speech recognition device. From the acoustic signal, one could identify the speaker, or the speaker's gender, or one could identify the language being spoken, or the speaker's physical condition or the speaker's skill in producing the language. We focus on speech recognition, by which we mean the recognition of the words in the signal.

PERFORMANCE SPECIFICATION

Take a moment to consider the concept of performance as it relates to speech recognizers. Just as with the performance of a car, the performance of a speech recognizer has many aspects. Recognition systems are sometimes touted in terms of their accuracy. For example, many systems at various levels of complexity have been described as "99% accurate" in some task. This is vaguely similar to comparing automobiles in terms of top speed. The cars that have the highest top speed are often not the cars that most people want or need. A useful car typically offers an agreeable array of qualities including ease of operation, reliability, fuel economy, smooth ride, a quiet interior that seats five, and an affordable purchase price. The fastest racing cars are usually not suitable for general street use.

There are many dimensions along which speech recognizers vary. Five of these dimensions are shown in Figure 2: perplexity, accuracy, adaptation, mode, and noise. Perplexity is a technical term that relates to the uncertainty of the task. If the possible distinct outcomes of the recognition are many, the perplexity is high, and if the recognition is only deciding between two possible options, the perplexity is very low. The perplexity is like the effective or expected vocabulary size. Error Rate in Figure 2 means raw accuracy, shown in the figure as average errors per number of words. Adaptation means how long the speaker has to use the system before it reaches its peak performance for that speaker — does it take 10 minutes or is it immediate? The mode of speaking is the manner in which the user is expected to speak. Is the form of input a code (like alpha, bravo, Charlie, delta, ...), or is there a requirement to speak in an isolated word-by-word mode, or can the system recognize casual, continuous speech? The last dimension shown is environment/channel. Can the system operate in a classroom, or does it require a very quiet acoustic environment? Is it immune to adverse noise conditions, and does it operate well in the loud and variable noise of a factory floor? Can it operate on speech signals that have been captured by a cheap microphone and/or transmitted over radio or telephone channels?

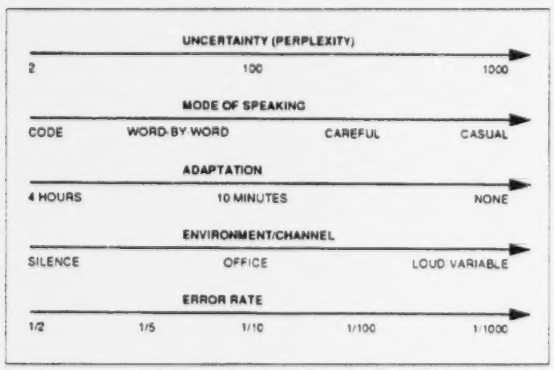

Figure 2. Dimensions of speech recognition performance

Notice that the right-hand end of the arrows in Figure 2 represents the desirable, high-performance goal for speech recognition, but that no recognition system, even a human listener, can operate at the right end of all the dimensions at once. Human listeners can simultaneously reach the right end of most of these dimensions. A current speech recognition system can achieve the right end of any one of the dimensions in Figure 2, by limiting the requirement on the other dimensions. Thus, for example, a system can achieve accuracies of just one error in 10,000 words, if the active vocabulary is a set of three or four distinct words, and the system can adapt to (or train itself on) the speaker repeating those few words many times over several hours, and the signal conditions are good. Similarly, we can design systems that will recognize any one of 20,000 or even 50,000 words, if an error rate of one in ten is acceptable, and again the speaker trains the system for several hours and the signal conditions are excellent.

The Advanced Research Projects Agency (ARPA) has been the single largest U.S. Government supporter of speech recognition development in the period 1970-1994. In the years since about 1985, ARPA has set up a series of technology challenges that can be understood with reference to the dimensions of Figure 2. ARPA has focussed mainly on the task of speaker-independent recognition of sentence material that is read aloud in a normal fashion. This sets the adaptation to the right hand end of the arrow (no adaptation), and the speaking mode somewhere between careful and casual, but certainly continuous. The sentence material has been taken from several sources (e.g. *The Wall Street Journal*), and the perplexity of the tasks has been about held in the range between 50 and 100. For materials with an average sentence length of 10 words, a word perplexity of 50 would imply that the recognition task was equivalent to a selection from among an equally probable set of 50^{10} different sentences, which is about 100,000,000,000,000,000 choices.

For readings recorded in a reasonable office environment, by 1994 the best laboratory systems had achieved accuracies on ARPA's *Wall Street Journal* task of about one error in 20 words. The ARPA challenge is to improve on the error rate and environment/channel dimensions — increasing accuracy in the presence of increasing levels of noise.

RECOGNITION SYSTEM DESIGN

This section explains the operation of a complete, but scaled down, version of an HMM speech recognition system, which we will call Simple-HMM. The system is missing several internal refinements thatare needed for high accuracy; for example, it uses a technique called vector quantization in its signal analysis. Further, it is assumed that the Simple-HMM system has been trained, the spectrum codebook and language model as seen in Figure 1 are set, and the system is ready to process and recognize an incoming signal.

As we examine the definition of the Simple-HMM, we will see that this system can recognize which one of 81 possible sentences was spoken. Put more exactly, for each of the 81 possible word sequences that are specified in the grammar, the system will calculate how likely it is that the input signal is a realization of that word sequence. The word sequence which can account for the observed utterance with the greatest likelihood score is "recognized" to be the one spoken. Relevant parts of the system are shown in Figures 1, 4, 5, and 6, and they will be explained in turn as we progress through the example system that we are calling Simple-HMM.

As shown in Figure 1, the Simple-HMM recognition system has two processes, the signal analysis and the search. The signal analysis takes an input signal and returns a sequence of spectra that more or less closely approximate the spectral shape of the input signal. The sequence of spectra is a greatly simplified representation of the original signal, yet if designed properly, this simplified representation is sufficient to identify words. The search process takes the sequence of spectra produced by the signal analysis process and finds the path through the compiled language model that yields the word sequence with maximum probability for that spectrum sequence. The words that are traversed in that maximum probability path are taken to be the recognized word sequence.

The next sections describe these processes and the related data structures in more detail. Much of the art of making an HMM system accurate, fast and extensible is left out of the Simple-HMM, but the decision logic in Simple-HMM is essentially the same as in the best current recognition systems.

SIGNAL ANALYSIS

In the Simple-HMM system, the first of the two recognition processes is signal analysis. In the first step of signal analysis, an acoustic signal is converted into an electrical signal by a microphone, and then into a digital signal by a small device called an analog-to-digital converter (ADC). The ADC replaces the electrical signal that varies continuously over time with a series of numbers that represent the amplitude of the original signal at fixed intervals of time. In a typical speech recognition system, the ADC samples the electrical signal 16,000 times per second, and the amplitude of the signal is represented by a 16-bit number at each sample. Thus, the signal enters the computer in the form of numbers that require (16 x 16,000 =) 256,000 bits to represent each second of signal. These numbers are a very precise description of the speech, and if they are reconverted into analog form, amplified and played back out through a loudspeaker, they can sound nearly indistinguishable from the original acoustic signal.

Following the operation of the ADC, the signal is available for processing. Inside the computer, the first process is called signal analysis. The main purpose of the signal analysis is to reduce this flood of information (256,000 bits per second) into a more manageable form that still retains most of the important linguistic information from the original signal. In the Simple-HMM system, the output of the signal analysis process is a much simpler stream of information — just two 3-bit numbers, 50 times per second. This is only 300 bits per second. A 3-bit number is a number that can take exactly eight different values; in this case {0,1,2,3,4,5,6,7}.

Consider Figure 3 which shows a waveform of the word *"san"* pronounced like the first three segments in the English word "sonic." The one-second waveform displayed at the top of the figure is represented in the computer as 16,000 16-bit samples. A spectrogram of the same signal is displayed below it for reference, and the output of the coarse-grain signal analysis in the Simple-HMM is shown at the bottom.

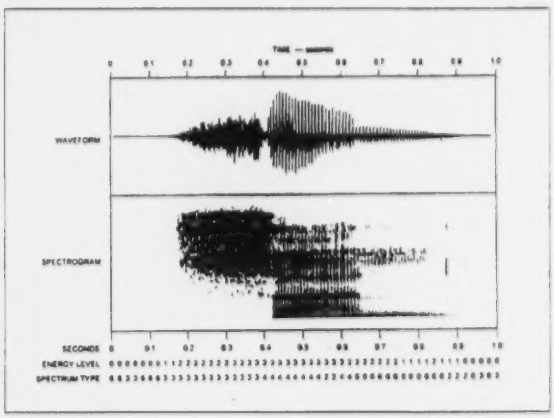

Figure 3. Waveform, spectrogram, and 20 msec frame parameters of a one sec signal with "san"

BEST COPY AVAILABLE

The key operation in the Simple-HMM signal analysis is vector quantization. **Vector quantization**, in this context, is the process that approximates the continuously changing spectral shape of the signal by a sequence of spectral types (Furui 1989). In the Simple-HMM system, the signal is approximated by one of eight spectrum types every 20 milliseconds, or 50 times per second.

In operation, the signal analysis process produces a spectral type for every 20 milliseconds of incoming signal. First, the actual spectral envelope of the 20 ms speech signal is determined by calculating a discrete fourier transform of the digital signal in that region. The signal analysis process then finds the spectrum type from among the set in the spectrum codebook that is most similar to the actual calculated spectrum. From this point forward, everything in the Simple-HMM recognition process is done with reference to the energy level and spectrum type, as quantized by the signal analysis process. The signal analysis has reduced the intricate detail in the one-second signal that entered the system to 50 pairs of 3-bit numbers per second.

Thus, the search process of the Simple-HMM ignores everything about the speech signal except this sequence of 50 pairs of derived, 3-bit numbers. The energy level is a number that corresponds to a coarse linear quantization of the energy level in the digital signal. The spectrum type, however, is a vector quantization of the original spectrum. The Simple-HMM reduces all the infinitely subtle differences in sound quality and timbre into exactly eight different types. No matter what the spectrum of the incoming sound, the signal analysis classifies it as one of eight distinct types and sends that type identifier across to the search process. The subsequent search through the compiled language model operates with reference solely to this string of number-pairs (an energy level and a spectrum type), which encodes all the information about the original speech that the system will use. The spectrum types encode the actual spectra found in the incoming signal, and the set of available types is conventionally called a codebook. Before running the system, we establish a set of spectra that are generally representative of the kinds of spectra that are observed in acoustic signals containing speech. Although a typical speech recognition system might use a set of 256 spectra to approximate the speech signal, for the Simple-HMM system we derived a set of eight spectrum types, or vectors. These spectrum types are shown in Figure 4. Take time to verify that the spectrum types displayed in Figure 4 match the visible spectral properties of the speech signal displayed over time in Figure 3. In the middle of the [s] (the region around time = 0.3 seconds), the best matching spectrum type is spectrum 3, and indeed spectrum 3 has its predominant energy in the high frequencies above 3000 Hz. The middle of the [a] (around time = 0.55 seconds) yields spectrum types 2 and 4 that have resonances in the frequency range between 500 and 1500 Hz. The signal analysis matches the middle of the nasal (around time = 0.75 seconds) to spectrum types 6 and 0 which have energy concentrated below 500 Hz and above 2000 Hz.

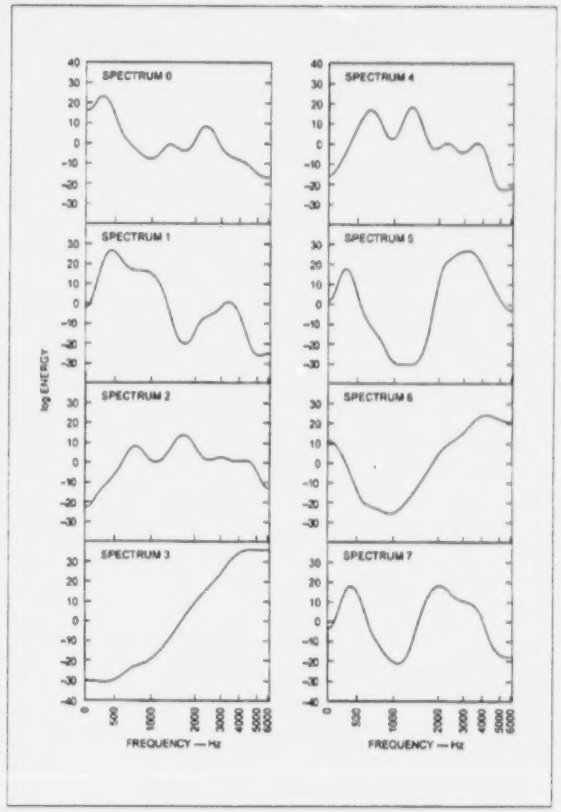

Figure 4. The set of eight different spectrum types used in Simple-HMM

In recent, high performance, HMM based speech recognition systems vintage 1990, the signal analysis process generally operated in the manner outlined above, except that the signal analysis produced four or six numbers 100 times per second (a 10 millisecond frame update), and the numbers represented a finer quantization of the incoming signal than those used described in the Simple-HMM. The codebook of spectrum types typically had 256 members, and the signal energy was quantized to 32 levels. Furthermore, the signal analysis modules in recent high-performance systems also produce a delta-energy and a delta spectrum for each frame of speech data. These "delta" parameters are derived by calculating the difference in signal energy or the difference in spectral shape between the current frame of the speech signal and a previous frame, usually two or three frames back. The delta parameters represent the rate and direction of change in the signal. For example, the delta parameters might indicate that the energy in the signal is increasing rapidly, although the spectral shape is only changing slightly toward a spectrum with more energy in the high frequencies. See Lee (1989); Cohen, et al. (1990); or Woodland, et al. (1994) for more details on the parameters of real, high performance systems.

SEARCHING THE COMPILED LANGUAGE MODEL

Signal analysis is the first major module of the recognition system. Signal analysis reduces the incoming signal to manageable dimensions, but the essential elements of the hidden Markov model approach will only become apparent when the search through the compiled language model is understood.

In order to understand the search, we need to understand the compiled language model and the method by which a sequence of number pairs produced by the signal analysis process yields a probability score for each path in the language model. The path with the best score is taken to be the system's best guess as to what words were in the signal. There are very efficient computational methods, like the Viterbi algorithm (Rabiner 1989), that find the best-scoring path.

COMPILED LANGUAGE MODEL

A compiled language model is the central element in an HMM speech recognizer. It contains the definition of the task that the recognizer is trying to solve. It specifies the grammar of the utterances that can be recognized; it specifies the words and where they can fit in the grammar; it specifies the pronunciation of the words; and it specifies the acoustic events that are likely to be observed when these pronunciations are produced. That is, the language model is built as a series of structures embedded within larger structures. Figures 5 and 6 illustrate the concept. Figure 5 shows the outer four layers of the structure of the language model of the Simple-HMM recognizer. Figure 6 shows the innermost three layers of a model for the syllable *"san"* (as in "sonic"). The compiled language model is the hidden Markov model.

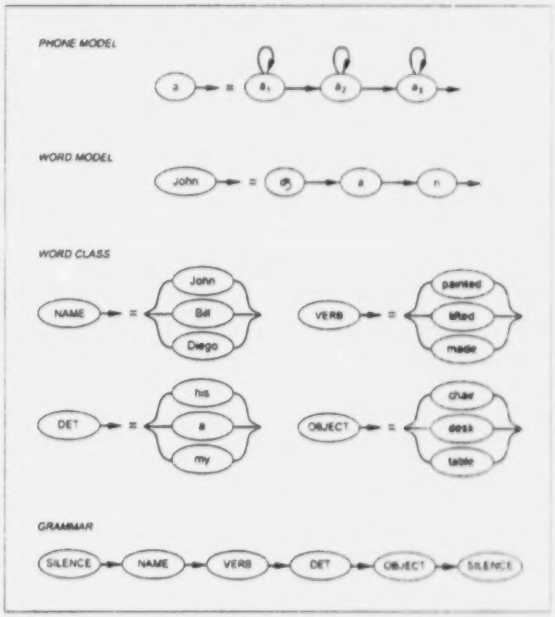

Figure 5. Embedded network elements for Simple-HMM

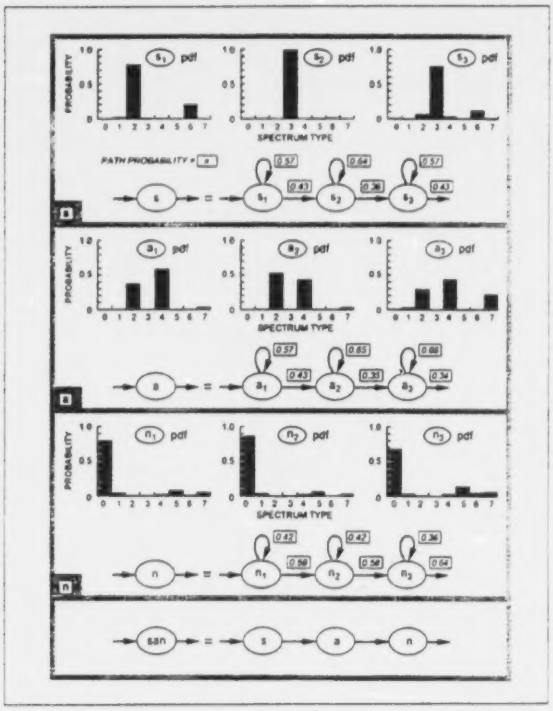

Figure 6. Transition and output probabilities for the phone models in "san"

But what is hidden about a hidden Markov model? In concise form, the hidden Markov model is a multiply embedded probabilistic model of the "language" that is to be recognized by the recognition device. The language model is a network of states and transitions between states, where each transition between one state and another has a probability of occurring. Thus, it is a Markov model. Simple-HMM has a sentence network that expands as the word class models and word models and phone models (as in Figure 5) are embedded one inside the other. The innermost states of the Markov language model are sub phone units (for example, the beginning state of [a] or the middle state of [s]) that are not directly observable in the signal, but have only a probabilistic relation to the observed signal parameters that are produced by the signal analysis. Thus it is a hidden Markov model. The states are not directly observed, but are inferred with more or less likelihood depending on the sequence of signal analysis parameters that are directly observed.

At its heart, Simple-HMM assumes that words are composed of sequences of linguistic segments (like phonemes) and that each segment can be represented by a simple statistical model. Thus, in a sentence like "Sam went in," there are three words, and the words have three, four, and two segments, respectively. Each segment, for example the [m/]in "Sam," is represented as a probability distribution which reflects the likelihood that various spectral shapes will be observed when that particular segment is pronounced.

The frequency spectra typical of various speech sounds are different: an [s] usually has much more energy higher in the frequency spectrum, while an [m] usually has little high frequency energy, but more low frequency energy. Thus, the HMM system represents the [m] as very likely to be observed with frequency spectra that have predominantly low-frequency energy, while the HMM system will expect to observe spectra with more high frequency energy when an [s] is spoken.

The compiled language model of Figure 1 is disassembled in Figures 5 and 6. Let's consider it closely. The model has a grammar (shown at the bottom of Figure 5) that expects and accepts exactly one type of sentence: a name, followed by a verb, followed by a determiner, followed by an object. The whole sentence starts and ends in silence.

The name in the sentence can be any one of the three forms "John," "Bill," or "Diego." The verb must be one of the forms "painted," "lifted," or "made." Each word expands into a sequence of phones, as suggested by the word model for "John." "John" is exactly a directional network of three phones, and each phone (e.g. [a]) is further represented as a sequence of subphone states in sequence. If we make some assumptions about how the words are pronounced and we assign one phone per phoneme and three subphone states per phone, we can see that this simple grammar has about 126 states when fully expanded to its implicit subphone states.

What is a state? The states are nothing more than tables that say how likely we are to observe a particular spectrum type or energy level when the frame in question is counted as being in that state. Figure 6 shows the probability distributions associated with the states in the phones [s], [a], and [n]. Only the probability distributions of the spectrum types are shown; those representing the relative likelihood of energy levels are not shown in Figure 6.

Note that the state structure is the same for all the phones: there is a sequence of three subphone states, each of which can loop back to itself or can pass to the next state. However, the probabilities

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associated with the various states like subphone s1 or a2 or n3 are quite different. So, for example, if the signal analysis identifies a frame as spectrum type 4, the probability density function (pdf) of a1 suggests that the frame could easily be part of an [a], but is not likely to be part of an [s] or an [n].

These probability density functions (inside subphone states, inside phones, inside words, inside grammars) define how information about the speech signal is related to sound segments, and therefore to words, and therefore to sentences, and therefore to the meanings that are conveyed, or at least encoded, in the spoken utterance.

SEARCH

Figures 5 and 6 show what the language model is, but how does the machine decide which word sequence was said? We can take an example, and work it through partially. Consider the signal shown in Figure 3. The sequence of 51 energy levels and spectrum types that were derived from it by the signal analysis are displayed at the bottom of the figure. To keep things simple and consistent with the simplification depicted in Figure 6, we will only work with the sequence of spectrum types, ignoring the information given in the sequence of energy levels.

Imagine that the signal that we are trying to recognize is the 1-second utterance shown in Figure 3, and that we are attempting to decide if it is an example of the word *"san"* or "nap" or "and" or "snap." For each of these words, we would have an utterance grammar (consisting of silence, <word>, silence) with the <word> part of the grammar expandable, much like the word *"san"* is expanded out in Figure 6. Each utterance grammar starts with the same optional silence, but the words start with one of the four two-sound sequences [sa], [na], [an], or [sn]. If we assume that the silence model (common to all four utterance models) has accounted for those first seven frames that have 0-level energy, we can then start to decode the utterance at the eighth frame, where the energy level becomes 1, and the sequence of spectrum types begins a string of 13 consecutive 3's. If we assume further that the final silence model takes care of the last five frames of the signal that have 0-level energy, we have 39 frames of speech signal for which we wish to find the best matching utterance model. Our task is to get the optimal state sequence for the observed sequence of frames. Figure 6 shows the state-to-state transition probabilities and the spectrum type probabilities for each of three phones: [s], [a], [n].

For the [s] model, the 13 consecutive 3's would pass through the model with the highest probability by associating the first 3 frame with the s1 state and the next eleven 3's with the s2 state and the last of the 13 consecutive 3-type frames with the s3 state. The probability of this sequence of 13 frames being from the [s] model is then simply the product of probabilities of these frames in these states, times the appropriate transition probabilities.

It is important to understand that there are many different paths through these 3-state models, and the calculation above is just the one that generates the highest probability paths for this data. Given the input sequence of spectrum types, every state sequence has a probability associated with it. From all the possible state sequences allowed by the model, the one with the highest probability is chosen. This could, in principle, be done by exhaustive search. However, an exhaustive search would be impractical, and the Viterbi algorithm (Rabiner 1989) allows us to obtain the optimal path without searching each particular path.

EVALUATION

A speech recognizer should be evaluated with reference to a task. Depending on what is expected, what is valuable, and what is catastrophic in the task context, we can design a reasonable test to measure performance and propose a useful set of numeric measures to report from the test. In various task contexts, a person might need the recognizer to align phone-length segments, or to return the best matching word string, or to find a particular database record, or to present the best graphic or voice response. A good place to start understanding how speech recognition systems are evaluated would be to review the evaluations conducted in the ARPA program and the databases that were developed for these evaluations (see, e.g., Price, et al. 1988 or Pallett, et al. 1994).

APPLICATIONS

There are many current applications of speech recognition and in the future the applications will be as widespread as they are for other types of actuators,

controls and data entry devices. Knobs, push buttons, switches, levers, keys, and pedals are found on innumerable devices around us. Because the keyboard is normally used as a surrogate modality for actions normally encoded in language, the keyboard may be largely replaced through the application of speech recognition technology in many domains, including language education. Several recent research projects have shown that speech recognition can be useful in language instruction for non native learners (Bernstein 1994), in language testing (Bernstein et al. 1990), and even in speech training for hearing impaired speakers (Watson and Kewley-Port 1989). The key concept is to reduce the perplexity of the recognition task enough so that non native speech can be successfully processed, recognized and scored. In some cases this requires the introduction of special algorithms for handling speech that is outside the scope of available training materials, and/or the collection and analysis of new speech data that is representative of the unusual speech that the device will be expected to process.

Many aspects of the other applications can be understood within the framework for the use of speech recognition in language education. The main impediments to the rapid growth of speech recognition in language instruction and other fields are its reliance on high-speed CPUs and the need for large bodies of special spoken material for training the systems.

There are many resources that are simply not yet available that would promote the application of speech recognition to a wider range of purposes. For example, one can imagine how the techniques outlined above could be used for teaching a foreign language, or in speech therapy, or in remedial reading, or in the diagnosis of speech disorders, or for automatic translation from Zulu to Dutch. To accomplish the last of these goals — translation from spoken Zulu — one needs training data. To be useful, the training data has to be consistently transcribed in accordance with a Zulu dictionary. For the majority of coming applications of speech recognition, the first missing resource is training data.

We have explained what speech recognition devices do, and how they operate internally. The purpose has been to give readers a first grounding in the technology in order that they may imagine new ways that speech recognizers can be used.

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PRESENTER'S BIODATA

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FROM WILLIAMSBURG TO MIDDLEBURY: A PROGRESS REPORT ON HRB SYSTEMS' INTERACTIVE VIDEO PROJECT

THIS SESSION IS PROUDLY SPONSORED BY HRB, D.C. HEATH AND COMPANY

STAN BISHOP, FEI ZHENG, AND JAY HODGKINS, HRB SYSTEMS
JEANINE CAUNT AND JEAN LAWLER, D.C. HEATH AND COMPANY

ABSTRACT

Since HRB Systems first introduced Language Dynamics at the 1993 CALICO Symposium at the College of William and Mary, much progress has been made toward providing Government, the academy, and industry interactive video programs for foreign language learning. When our project team arrived (late) at William and Mary, we had a five-minute demonstration package, a borrowed PICS Spanish film, a borrowed table graciously provided by Frank Borchardt, and a software program that had been successfully debugged only nine hours earlier in our office in Fairfax, Virginia. Two years later at Middlebury College, we are going to demonstrate 17 full length interactive feature films in eight languages (using Chinese, Arabic, Cyrillic, and Roman orthographies), 13 hours of interactive video for ESL application, an MPEG I implementation of our interactive film programs; and a concept for networking a digital version of our program to multiple users. None of this would have been possible without the advice and guidance that we have received in such abundance from virtually every quarter of CALICO.

Our presentation will highlight the many ways that industry can work with Government and with the academy to ensure a permanent role for technology in the language classroom. By extension, our presentation will also show that cooperation between Government, industry, and academia is facilitated and, in fact, blossoms when professional organizations such as CALICO provide the forum, the expertise, and the leadership for regular exchanges among these institutions.

We will conclude the presentation with a demonstration of several of our interactive language learning programs. Additionally, our sister division in Raytheon Corporation, D.C. Heath and Company, will demonstrate their award-winning CD-ROM programs for middle and secondary level French and Spanish.

COMPANY PROFILES

HRB Systems produces multimedia products for learning ESL, foreign languages, and other subjects. The company repurposes existing, award-winning foreign language and English feature films as interactive tools for developing and maintaining language skills.

D.C. Heath and Company has been a major publisher of instructional materials for over 100 years. In addition to an extensive array of print materials for teaching French, Spanish, Italian, Latin, and German, the company also offers a wide array of CD-ROMs for middle, secondary, and advanced levels in several foreign languages. Among these are the award-winning CD-ROMs *Discovering French* and *Dime Interactive*, as well as the *Cine Interactive* full-length feature films on interactive laserdiscs.

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THE CAMILLE PROJECT — ESPAÑA INTERACTIVA AND INTERACTIEF NEDERLANDS

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INTRODUCTION

In 1992 a group of five European universities, coordinated by the University of Teesside in Great Britain founded, with LINGUA funding from the European Union, the CAMILLE (Computer Assisted Multimedia Interactive Language Learning Environment) Consortium to develop computer assisted multimedia interactive courses in each of the participants' languages, based on the recent completion of **France InterActive** at the University of Teesside. The current members of the consortium and the courses being developed are:

- University of Teesside, Great Britain: **Working in English**
- Université Blaise Pascal and Université d'Auvergne, both in Clermont-Ferrand, France: **Travailler en France**
- Haagse Hogeschool in the Hague, Netherlands: **Interactief Nederlands**
- Universidad Politécnica de Valencia, Spain: **España Interactiva**

CAMILLE's primary objective is to exploit recent developments in multimedia computing to create a flexible, student centered, electronic language learning environment to support the acquisition of a second language. Given our universities' specific needs, the consortium's first target was to produce a learning resource for beginners of Spanish and another for beginners of Dutch, as well as advanced intermediate course materials in French and English for specific purposes.

This paper will discuss the Consortium's approach of the *ab-initio* courses for Spanish and Dutch by describing the contents and structure of the multimedia course material developed at the Universidad Politécnica de Valencia and the Haagse Hogeschool.

España Interactiva and **Interactief Nederlands** are self contained, computer mediated learning resources comprising approximately sixty hours of highly interactive training, designed to support the acquisition of a basic functional competence in Spanish or Dutch. They are aimed at motivated adult students who may, or may not, have access to a tutor. The functional content of these courses is designed to encourage the acquisition of a range of what may be called communicative skills, by which we mean the ability to use language to do things. This content, therefore, determined our basic pedagogic approach, which, in general terms, may be described as encouraging the acquisition of a communicative competence in a language: e.g. using the telephone to make appointments, asking a travel agent to make travel and accommodation arrangements, ordering a meal at a restaurant, asking for directions, etc. Thus from the very beginning of the course the target language is used as the primary language of communication between the computer and the student. The only allowance made to the student is the possibility of reading but never hearing a set of instructions and explanations in his/her native language.

Consequently, the activities we have created not only encourage the acquisition of real world competencies, but also require the student to use the target language in order to meet the immediate goal of undertaking the exercise. This may be as simple as understanding some instructions in the target language about what to do next or as complicated as playing and recording a role in a dialogue.

The design of CAMILLE's interactive courseware is an attempt to acknowledge the fact that a true linguistic competence is only achieved by regularly using the language accurately to do something. To achieve this end we have embedded a variety of goal directed learning strategies in a media rich electronic information environment that supports the study of the target language. The notion of supporting the study of the language is crucial here. The objective

wasn't the creation of software to "teach" Spanish or Dutch, but the construction of learning resources in the shape of an environment that would provide the student with all the tools and information, short of a live teacher, that they might need to undertake a beginners level course in Spanish or Dutch.

Accordingly, when the student enters a study unit in the interactive range the opening screen displays a list of learning objectives with audio. This screen then leads the student automatically to what we call menu, where there are button icons representing a grammar book, a dictionary, a book about Spanish/ Dutch culture, and a book about linguistic functions, as well as a table of contents. From here the student may move to any point in the Unit by selecting the appropriate item or they may choose to open any of the reference sources. Since the object of these hyper reference books is to supply the user with information on demand, they may be accessed at anytime during the course. When the user selects one of the reference sources, it is opened as a separate window of information on the screen. It partly overlaps the study page, but doesn't completely obscure it.

However, before turning to examine the lesson materials contained in a given unit, a few words about some of the special features of the reference books might be appropriate. Each of these may be approached as a self contained book in its own right, but our expectation is that they will primarily be accessed in response to particular questions that occur to the user. Of all of the reference books the "dictionary" is perhaps the most unusual. In addition to providing L2/native language equivalencies, it provides audio recordings of native speakers pronouncing each of the words. The grammar book is relatively traditional, but does provide hyper links to exercises embedded in the "textbook" that illustrate, or provide practice on, particular grammatical points. Similarly, the "function book" provides a summary of various discrete speech acts under more general headings, like "greetings," or "asking the way," thus permitting a user to review work that may have been encountered in other parts of the course. Finally, the "culture book" summarizes and extends the cultural information that is an integral part of the textbook's course material.

The reference materials thus provide all the information the learner needs to acquire the desired level of competence, but in themselves they offer little guidance as to how to acquire it. This guidance is found in the lesson materials. In order to provide learners with some direction to their studies, these "lessons" are, first, organized into 10 modules, the fifth and tenth of which provide opportunities for review and assessment. Each of these modules is in turn sub divided into four units which deal with different aspects of a given topic. Each unit represents approximately one hour and a half of interactive study for the learner. However, although each of these modules and units is self contained, focusing on a particular set of related communication skills (e.g. using the telephone to some specific purpose), they are not totally independent and cannot be approached at random as a collection of linguistic functions to be studied in any order. Rather they are organized into a course of study. Each new unit and module builds upon the grammatical and lexical content of preceding ones. Consequently, while it is possible for suitably competent learners to begin the course at varying points, it is expected that they would thereafter follow the course as designed.

Similarly the units themselves offer the student a pattern of study, but allow considerable freedom of choice over the exact order in which particular activities are undertaken. The typical structure of a unit is as follows: As mentioned above, on commencing the unit, the student is offered a brief description of the learning objectives contained in the unit. These learning objectives are given in both a spoken and written form. The spoken version is always in the target language but the written also gives a translation in the student's native language. Next the student encounters the "menu," which includes a table of contents for the unit distributed in three sections: linguistic functions, grammar and vocabulary. From here they can access any of the activities available within the unit in any order they wish. However, these activities are the sequence which focuses on the specific linguistic skills to be practised within the activities. These skills are further explored and developed in a series of activities and exercises designed to aid in their acquisition. Consequently, the student is strongly encouraged, but not compelled, to watch the video before attempting the exercises.

The video sequence itself is usually between two and three minutes in length and normally takes one of two forms. Most commonly, it is a dialogue between two or more individuals that exemplifies some specific functional competence. The language used in the dialogue also typically introduces some new grammatical and lexical items. However, it is important to note that the student is not simply a passive observer to these video sequences. The software

provides the user with a set of video controls identical to those found on a domestic video tape player. In addition to such usual functions as play, rewind, pause and fast forward, these controls also offer the user an "instant replay" button which replays just the last complete sentence of the dialogue. It might be said to be the equivalent of the linguistic function represented in conversation by the expression "sorry." Finally, the control panel also offers the user the opportunity to display subtitles in the target language. Consequently, the learner has considerable control over the pace and content of their viewing, including pausing it to access one or more of the reference sources to clarify problems e.g. unfamiliar lexical items as they arise.

The video sequence is available in three different video screens: the main video screen which offers the possibility of subtitles; a second one which displays both the video sequence plus the full length written dialogue aiming to encourage some reading practice, and the third which adds to this a short comprehension exercise, normally in the form of true/false questions. Interaction is also encouraged by means of a record button which enables the student to play the role of one of the characters in the sequence and listen back to his own recording.

Although the majority of introductory video sequences take this form, others, for example, unit, take the form of documentaries. These documentaries differ from dialogues in that they are dominated by a single voice speaking on some particular topic and are included for three reasons. First, they provide a valuable opportunity to practice the skill of listening by concentrating on an extended piece of speech.

Second, the televisual medium is an excellent way of relating information about the cultural background to specific linguistic functions. For example, the unit in the module dealing with shopping skills contains a documentary which introduces the differences between the shopping facilities found in small towns or villages, and cities in Spain. Finally, and perhaps most importantly, these documentaries are included to encourage the acquisition of the skill of reading. The video remains available to the student and they are encouraged to use it, along with all the other reference sources, to assist in their reading.

Normally, a unit contains no less than nine activities in addition to the initial video. These activities are grouped under the three headings of function, grammar, and vocabulary depending on their primary focus. The student enters an activity page, by clicking on its icon, which contains interactive audio, role playing exercises which invite the learner to use language within a functional context.

In addition to the more traditional learning activities such as may also be found in paper based courseware, CAMILLE's interactive range offers a large number of role playing exercises which exploit both interactive video and interactive audio. In these exercises, the student is invited to adopt the role of one of the speakers in a dialogue and participate, by recording their own utterances, in the creation of a new dialogue which can then be played back and compared with a pre recorded example. (The role of the other speaker is also executed by means of pre recorded audio or video utterances.) The student is prompted, and can, if necessary, gain access to pre recorded models, but the objective of the exercise is to engage the student in the simulation of "real life" situations.

There are also a number of more traditional exercises that permit practice with word order and lists of keywords and phrases with their native language equivalents in every unit. These latter are also sound enhanced to provide pronunciation practice and can be scrambled so that the students can quiz themselves. Still more significantly, every activity in CAMILLE's interactive range is sound or sound and video enhanced. The software not only exploits pre recorded audio or video, it also provides facilities for the students to record and playback their own utterances.

All of these activities are also supported by a number of context sensitive helps. For example, every exercise or activity is introduced by a brief explanation of the subject under study and set of instructions, which are automatically heard when entering the activity, that tell the student what to do. These explanations and instructions are presented orally in the target language, but text versions in both the target language and the native language are also available by clicking on a "Help" button. In addition to this information, the software also provides feedback on, and keeps records of, the learner's performance. Wherever appropriate, immediate audio feedback, both positive and negative (in the target language, of course), is given. There is also a "Your Progress" button that provides a summary of the student's performance on a particular exercise, and that information is also stored in a database that can be accessed by the student or tutor in order to gain an overview of the student's performance.

In addition to the CAMILLE interactive range for ab-initio language learning, the consortium has extended the utility of this environment to more advanced levels of language acquisition, e.g. acquiring the specific linguistic skills needed to participate in business communication, offering a whole range of other areas of study that the new technology can support not obviously touched upon by the interactive range.

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The presenters would like to recognize Bruce Ingraham for writing this article. Mr. Ingraham is the Assistant Director of the CALL Research Unit at the University of Teeside and Co-director of the CAMILLE Project. Although Mr. Ingraham was originally scheduled to present, he was unable to be in the U.S. at this time.

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PEDAGOGICAL APPLICATIONS OF FRENCH GRAMMAR CHECKERS

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ABSTRACT

This paper describes an ongoing research project being conducted at Monash University and the University of Melbourne to evaluate the linguistic accuracy and pedagogical applicability of four French spelling/grammar checkers: **Le Correcteur 101**, **GramR**, **Hugo Plus**, and the **French Proofing Tool** for Microsoft Word. The exploitation of grammar checkers to improve foreign language composition skills is an attractive proposition for students and teachers alike. This attraction is made all the greater by the emphasis on the writing process. Unlike mass market English grammar checkers (e.g., **Grammatik**) which intrinsically target literate native speakers, and so have proven ill suited to use with foreign language students, the French grammar checkers used in this study have been designed with second language learners in mind. Of French Canadian origin, they all incorporate detection and correction algorithms specifically attuned to dealing with errors characteristically made by English speaking learners of French.

The Monash–Melbourne research project consists of three areas of investigation: software evaluation, teacher centered exploitation, and student based applications. The primary area of focus of our presentation will be that relating to the assessment of the relative merits of each grammar checker. Of special interest in this regard will be the extent to which they under correct and miscorrect, and the adequacy of correction feedback. The analysis of program performance will be based on several hundred actual students' compositions over a range on linguistic levels. As part of the process of evaluating program performance, data will also be collected to build a detailed profile of student errors, upon which future courseware applications are to be based. Our paper will conclude with a summary of these findings and their pedagogical implications.

PRESENTERS' BIODATA

Jack Burston (B.A./M.A. in French, Ph.D. in Linguistics) is Senior Lecturer in French, Department of Romance Languages, Monash University (Australia). He teaches a postgraduate course in CALL and supervises Ph.D. and M.A. candidates in this area. He has a long-standing interest in authoring languages for courseware development and frequently organizes CALL workshops for foreign language teachers. More recently, his research has focused on the pedagogical exploitation of commercially available writing resources (e.g., on-line dictionaries, spell checkers, grammar checkers) in the teaching of French composition. In conjunction with the Language Testing and Research Center of the University of Melbourne, he is also currently developing computer adaptive placement tests for French and Japanese.

Monique Burston (M.A./Ph.D. in Linguistics) is Associate Professor in French, Department of French and Italian Studies, the University of Melbourne (Australia). She is coauthor of a number of computer assisted French programs: **French On-CALL Grammar Review**, **Poil de Carotte** (Transparent Language), and the **French Computer Adaptive Test**. She likewise has an active research interest in language teaching methodology and performance assessment.

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MONTEVIDISCO IN QUICKTIME

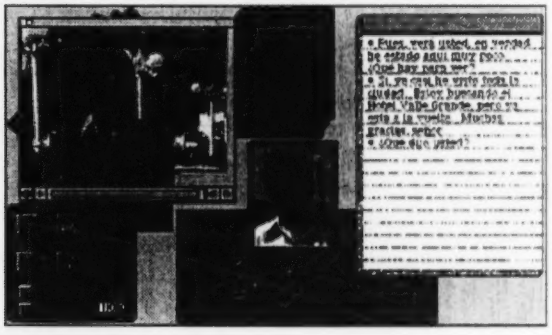
CHARLES BUSH, BRIGHAM YOUNG UNIVERSITY

ABSTRACT

Montevidisco is a role-playing simulation that gives intermediate to advanced Spanish students experience with conversational Spanish as spoken by native speakers. Using digital video segments, it puts you into the role of a visitor to the hypothetical city of Montevidisco, Mexico. You interact with native speakers in realistic circumstances. What happens to you depends on your responses — you could end up in a hospital or in jail if you say the wrong thing at the wrong time!

At the 1992 CALICO conference in Monterey, I talked about the potential of **QuickTime** digital video, using examples from a prototype **QuickTime** version of **Montevidisco**. Now **QuickTime Montevidisco** is almost finished, I will re-address some of the issues, predictions, and conclusions from that paper — where was I right and where was I wrong?

I will begin the presentation with a brief demonstration of **Montevidisco** (for those not familiar with it) and an introduction to **QuickTime** digital video. For the bulk of the session I will focus on the challenges encountered in the conversion process, both those predicted in 1992 and those unexpected. Since **QuickTime Montevidisco** is also a conversion to **HyperCard** 2.2, I will also discuss some of the challenges in that conversion, as time allows.



A Screenshot from Montevidisco

PRESENTER'S BIODATA

Charles D. Bush, M.A., Brigham Young University, is Senior Research Consultant with primary responsibility for Macintosh courseware development in the Humanities Research Center at Brigham Young University. He has done programming and computer assisted instructional (CAI) software development using **HyperCard** on the Macintosh since its inception.

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PUTTING MULTIMEDIA INTO THE FOREIGN LANGUAGE CLASSROOM

MICHAEL D. BUSH, BRIGHAM YOUNG UNIVERSITY

ABSTRACT

It is generally accepted that the use of visuals in the foreign language classroom is an effective way to introduce vocabulary and to present culture. Maintaining pictures and slides, however, can be a daunting problem for the foreign language teacher interested in using visual images of the target culture to enliven the classroom experience. With the capability to store images as well as motion sequences in a randomly accessible fashion, videodisc and new digital storage techniques are technologies that can make exciting visuals available to the classroom teacher. For this to be possible, however, teachers need to be able to easily retrieve the images and motion sequences to suit any particular lesson's objectives.

This presentation will review work undertaken to produce a computerized prototype for image storage and retrieval. The presenter will outline the organizational scheme that was designed to enable easy categorization and access to images stored in the database. The prototype will be shown and the presenter will demonstrate how it can be used.

PRESENTER'S BIODATA

Michael D. Bush, involved in programming different computers in various ways and using them to solve diverse problems over the past 25 years, has a very wide range of experience in the uses of high technology in education. He graduated in 1972 with a B.A. in Political Science from Brigham Young University, was awarded an MBA from the University of Missouri in 1976 and a Ph.D. in Foreign Language Education and Computer Science from The Ohio state University in 1983. From 1980 to 1984 and from 1986 to 1992, he served as Director of Research in the Department of Foreign Languages at the United States Air Force Academy. At the Academy Professor Bush played an instrumental role in the installation of what was probably the first operational interactive videodisc based language learning center of its kind and size on any college campus in the world. Since his retirement as a Lieutenant Colonel in the United States Air Force in August, 1992, Professor Bush has been serving as Associate Professor of French and Instructional Science at Brigham Young University in Provo, Utah.

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THE TELL CONSORTIUM: COLLABORATION IN SOFTWARE DEVELOPMENT

GRAHAM CHESTERS AND JUNE THOMPSON, UNIVERSITY OF HULL – UNITED KINGDOM

BACKGROUND

When, in 1992, the UK Government's Higher Education Funding Council announced that they were going to award over £20 million against university bids to develop courseware, the stampede towards word-processors was immediate. The mechanism to implement this national policy was straightforward: instead of distributing taxpayers' money immediately to individual universities, the Council top-sliced the governmental allocation, effectively taxing each university in the system and then inviting them to bid to get their slice of the money back. But the essence of the Teaching and Learning Technology Programme (TLTP) was that funded projects must benefit the system as a whole. It looked therefore with favor on consortium projects, involving large numbers of universities and therefore potentially affecting large numbers of students. The larger the number of students affected the lower the unit cost of courseware development. It followed also that the more popular subjects would be favored.

At that time, the national Computers in Teaching Initiative Centre for Modern Languages (CTICML) had been running at the University of Hull for over three years. This Centre, a product of another Funding Council top-slicing and another competition, had been given the task (as had a further 19 subject-based centres) of promoting the use of computers in the teaching of modern languages throughout the university system in the UK. After three years' operation, the Centre had established itself as the obvious leader of any language learning consortium that wished to bid for TLTP money. Its nationwide work meant that it was in a position to identify good courseware, gaps in provision, what could be delivered, and who was best qualified to deliver it. The Centre invited expert university-based CALL practitioners to a hotel in Hull, locked them in rooms that years ago would have been smoke-filled and succeeded in herding some thankfully independent-minded individuals into a persuasive alliance.

While a degree of eclecticism was politically necessary, some key principles were accepted. There would be a concentration on a limited range of major languages; a broadly common approach to language pedagogy (communicative, functional, contextualized); a commonly agreed "house-style" for new materials; interlocking developmental groups, occupying space on the spectrum of learner competence from beginner to advanced student; central evaluation by an evaluator external to the developmental groups; a central management structure handling finance, publication, reporting, training and dissemination; a common technical approach including cross-platform transportability between Macintosh and Windows environments.

The consortium proposed a three-stranded approach which aimed at both comprehensiveness and flexibility, a mixture of "ready-made" core materials at beginner level and more general material allowing the teacher and learner to exploit resources and tools at appropriate levels. The three strands (courses, resources, tools) are interlocking and designed to be accessible on the same platforms.

With such a large consortium, an easily understood, taut management structure was proposed to ensure cohesion and value for money. The lead site, the CTI Centre for Modern Languages at the University of Hull, was to be financially responsible for the project and, with the advice of a Management Committee, would contract other sites to fulfil agreed aspects of the whole programme. The Management Committee would make decisions on distribution of funds, award of contracts, and oversee matters of general importance (negotiation with funding bodies and industry, copyright, publishing, publicity, dissemination and coordination of activities across the three strands).

Great emphasis was laid in the original bid on evaluation and dissemination. In total, the funds requested were £1.66 million over a period of three years. After negotiation, the figure awarded was £1.33 million.

The consortium consisted of 37 universities from the south coast of England to the tip of Scotland, including Northern Ireland. Fifteen of these were designated development sites, the remainder affiliate or evaluation sites.

PEDAGOGY AND COURSEWARE DESIGN

Nobody who knows language teachers would make the mistake of assuming that any group of twenty or more would agree on a single pedagogic model. The variety of the target learning constituency was another argument for a broadly tolerant approach. The well-known individualism of language teachers also accounted for a stress on adaptability of courseware. The consortium, soon christened the TELL Consortium (technology enhanced language learning), determined to produce deliverables that could be modified, adapted, and integrated into the curricula of different institutions. It shied away from the prescriptive, "take it or leave it" whole course approach. The result is that the Consortium has been criticized for its eclectic menu of deliverables and for not seizing the opportunity to design a fully-rounded complete, seamless package. Indeed, the choice was there, but deliberately (and wisely) eschewed. The product might have been perfect but unused. Such is the effect of original sin.

Whilst it was tempting to opt for development at the leading edge of technology, it was felt highly unlikely that by the end of the three-year funding period, the provision of equipment in university language departments would have moved fast enough to justify such development. Indeed, there is still some way to go before all UK university departments and language centers even have a modest cluster of machines which conform to TELL specifications, i.e. IBM 386 with 4MB RAM, Windows 3.1, a sound card and CD-ROM drive, or an equivalent standard Macintosh. The decision to develop at the lower end of the available technology was thus very much in tune with the ethos of TLTP, and the emphasis on getting the materials *used* by students and teachers. One of the conditions laid down by TLTP was that the funding must not be used to purchase machines for student use: this has meant that some of our affiliate sites, wishing to evaluate TELL materials, have been able to exert pressure within their own institutions for provision of suitable equipment.

Portability, flexibility and adaptability are words which are frequently emphasized by our TLTP paymasters: this approach poses no problem to our development teams, allowing them to concentrate primarily on teaching and learning methodologies, with ample scope for teachers to input their own materials and update them as required. Where "ready-made" language learning materials are preferred — and there remains a steady demand for these, in particular for grammar-based exercises — they are available. But many of the TELL packages provide authoring shells and a bank of texts or examples in various languages, with the facility for these to be replaced to suit a variety of student needs.

It is not easy to manage a large team of academics, many of whom have major teaching and research commitments; to inculcate the idea that deadlines are *not* meant to be elastic, and that the consortium must deliver the products it has promised, on time. Many colleagues, bursting with new ideas and full of enthusiasm, must be restrained from adding just one more feature, and persuaded instead that a robust, working program, as bug free as possible, preferably without linguistic mistakes and finished on schedule, is what is required and what can be afforded.

EVALUATION

The consortium's programme of evaluation is proving invaluable, having been established in the very early stages, so that constant reference back to the original aims of each program ensures that learning outcomes are never far from developers' minds. In these early stages a Pedagogy Panel, led by the consortium's evaluator and including representatives of the development teams, formulated a set of Design Principles, which developers were encouraged to work to. A degree of standardization was also introduced by the production, again in consultation with developers, of a Style Guidelines document.

Evaluation at sites other than development sites started as soon as prototypes were available. In April 1994, twelve preliminary versions of TELL programs were distributed to every higher education institution in the UK (approximately 130), with a request that as many of them as possible should be tested out with students, and that informal feedback should be sent back to the management office at Hull. The response to this unsolicited assignment was encouraging, with some teachers contributing many hours

of work in providing helpful data. This exercise was in addition to the formal evaluation program, which is ongoing for all the TELL programs, of which there are more than forty. The evaluation exercise drafts in a small army of paid research assistants, teachers, or postgraduate students, all of whom are required to provide specific information in a standardized format. Appropriate groups of students are selected for every program and evaluation documentation is provided, customized to fit each individual program. Students' language learning needs and the extent to which they are met by the programs are at the heart of the investigations carried out by evaluators.

A major offspin of the whole evaluation process will be the published account of what is a unique research exercise. This will probably be the first time that a uniform set of data on computer-based language learning activities has been collected on such a scale. Analysis of the findings, whilst fulfilling the primary need for allowing developers to incorporate learners' and teachers' suggestions into the final program versions, will also provide valuable insight into the language learning process and the extent to which computers may contribute to this learning. The issue of efficiency gains is also of considerable interest, and an attempt has been made to build such questions into the evaluation process.

When final products are delivered by developers, at the end of September 1995, they will be vetted by a small Quality Validation Panel, which includes the external evaluator.

DISSEMINATION AND INTEGRATION

The fact that the TELL consortium is led by the CTI Centre for Modern Languages allows for a relatively smooth dissemination process: all the mechanisms, such as mailing lists, publications, workshops and regular visits to language departments were already in place before the consortium was established, and CTICML staff were already experienced in assessing the needs of university language teachers and students and recommending suitable computer-based materials. The approach has not changed, in that language learning *needs* are still at the top of the agenda and that *integration* is still the key to success. The difference is that, in addition to other software on the market, there is now available a range of materials, in the most frequently-taught languages, which are tailored to the requirements of a large spectrum of the higher education sector. The fact that these materials are designed and developed by fellow academics counts for a lot with many teachers: some, who may otherwise have dismissed the whole idea of using computers in teaching, are at least willing to acknowledge that colleagues who are well-respected in their discipline are unlikely to be associated with a project that is not based on sound pedagogic principles.

In addition to the normal CTICML channels, a series of specialist workshops, focusing on the TELL materials, is ongoing. On these occasions, teachers are given the opportunity to have "hands-on" practice, with the developers there to answer questions, discuss pedagogical issues and take on board any comments or criticisms teachers may offer. This in turn contributes to the whole cycle of development, evaluation, and refinement, in which users play such a valuable role. The Teaching and Learning Technology Program has its own series of TLTP roadshows, designed to promote materials from all disciplines, and staff from the TELL consortium frequently present papers and demonstrations at national and international conferences.

CONTINUATION OF TELL CONSORTIUM

On December 31, 1995, the TELL funds from the funding councils run out. All deliverables duly delivered, do the tents fold and the tribe disperse? Hardly. It would be too much to expect that the courseware will be installed everywhere with no problems, especially given the eccentric network configurations found in British universities. There will be a need for a help and support desk, a hotline for problems. The CTICML, with its present resources assured until 1999, will be able to give advice as it can on other software packages, but the detailed, product-specific advice needed requires more resources than are currently available. So the argument is being made for continued "after-sales service" with the funding councils. Does it really make sense to spend £1.33 million on developing courseware and then nothing on preserving its shelf-life? Equally, does it make sense for the leading language courseware developers to have worked closely together for three years and then disperse? Common interest and self-interest suggest not. Current plans confront the commercialization of the TELL deliverables, proposals for joint applications for European Union funds and the marketing of the experience in product development and (importantly) project management. The TELL Consortium will certainly continue.

PRESENTERS' BIODATA

Graham Chesters is Professor in the School of European Languages and Cultures at the University of Hull. He directs the UK's national Computers in Teaching Initiative Centre for Modern Languages, a specialist information and consultancy unit that serves the whole of the UK Higher Education System. He is also Director of the TELL Consortium. He is a founding member of the newly formalized Executive Committee of EUROCALL and is Co-editor of its journal, *ReCALL*, and of *Emanicipation Through Learning Technology* (1994).

June Thompson is Manager of the CTI Centre for Modern Languages and the TELL Consortium, and is Secretary of EUROCALL. She is co-editor of *ReCALL*, the *ReCALL Newsletter*, the *ReCALL Software Guide* (1993 and 1995) and *Emancipation through Learning Technology* (1994). She is also co-author of *TransIt*, the translation teaching methodology which serves as a prototype for some of the TELL products.

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PROJECT CYBERBUCH: EFFECTS OF A HYPERMEDIA APPLICATION ON VOCABULARY ACQUISITION AND GLOBAL COMPREHENSION

DOROTHY CHUN AND JAN PLASS, UNIVERSITY OF CALIFORNIA AT SANTA BARBARA

ABSTRACT

CyberBuch is a hypermedia application that provides students reading German texts with (a) advance organizers in the form of a movie clip designed to facilitate global comprehension and (b) a variety of glosses for words in the form of text, graphics, video, and sound intended to facilitate and reinforce acquisition of vocabulary. In this presentation, we first briefly discuss the theories of second language (L2) vocabulary acquisition and reading comprehension, as well as theories of cognitive styles with regard to sensory modalities, upon which the program is based.

We then report on two rounds of testing that addressed the usability of the program as well as its effects on global comprehension and vocabulary acquisition. Log data of students' activities while using the program were gathered with a tracker, and students were given vocabulary tests and asked to write recall protocols. The results of the pilot study with 37 students showed that there was very little attrition in the number of correct answers given in the vocabulary test administered immediately after using the program and in an identical test two weeks later. The second study with 103 students showed an interaction between students' performance on the vocabulary test and the type of link available for the word: significantly higher scores for words with picture links were attained.

As for global understanding, preliminary analyses of the recall protocols from the second study with a revised preview movie showed much improved comprehension over the pilot study. Further analyses using a weighted propositional scheme (cf. Bernhardt 1991) are presently being conducted in order to determine whether specific elements in the new version of the preview helped students to recall specific propositions, e.g. main ideas, number of characters in the story, moral, particular details.

PRESENTERS' BIODATA

Dorothy M. Chun (Ph.D. University of California, Berkeley) is Assistant Professor and Coordinator of the German Language Program at the University of California, Santa Barbara. She has published on CALL in the *CALICO Journal, Foreign Language Annals, System,* and *Educational Multimedia and Hypermedia,* and is currently developing a multimedia program to improve reading comprehension skills. Her other interests in CALL are teaching tone and intonation with computers and the use of networking to teach L2 writing.

Jan L. Plass (Ed.D., University of Erfurt, Germany) is a visiting scholar in the German Department at the University of California, Santa Barbara. He coordinated a project to develop a hypermedia learning application with a client-server-architecture at the Technical University of Dresden and has worked in several multimedia projects in Germany and the U.S. His research interests are individual learner differences and their effect on both behavior as well as learning outcome when using hypermedia applications. He has published on CALL in the *Journal of Educational Multimedia and Hypermedia.*

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TALKING POETRY — A HYPERMEDIA APPLICATION FOR POETRY EXPLORATION

EDNA AMIR COFFIN, UNIVERSITY OF MICHIGAN

ABSTRACT

Talking Poetry is a hypermedia application for the study and exploration of poetry. It is based on a 60 minute video anthology of modern Hebrew poets. While the content of the specific application is Hebrew poetry, the model presented can be used in other languages and literatures. Two models will be discussed: the **Exploratory Mode** (EM) and the **Creative Mode** (CM). In the Exploratory Mode, the users can hear and read selected poems, and in many cases can also hear the musical rendition of these poems, and explore the various aesthetic devices used in the poems. The menu offers users biographical information about the poets, the period in which they lived, and a selected bibliography of the poets' works and of critical essays written about the poems. In the Creative Mode, students will be provided with tools and templates for doing their own poetry projects, analyzing, and presenting poems.

In this paper, I shall describe the pedagogical Exploratory Mode used for the presentation of poems, demonstrate selected modules from the EM modules of *Talking Poetry* and discuss classroom implementation in an undergraduate educational setting. I will also discuss plans for adding the Creative Mode templates to expand the scope of *Talking Poetry*.

MAIN ISSUES

For most students reading is perceived as a difficult and sometimes even an unwelcome and frustrating task. It is perceived as a "remote" text, one which is not accessible to the normal process of deciphering of meaning. This perception is heightened when considering poetry written in a language that is not one's own native language. Experiencing a poem depends on comprehension of the text on a literary level as well as understanding the various aesthetic devices being utilized in the composition of such a text. It is often a complex composition of words, lending text a unique texture and fabric. All aspects of language come into play — denotation and connotation of words, allusions and references to other texts, cultural symbols which operate within a language system, various registers of language, sound and rhythm patterns and more. In poetry, language works on both aesthetic and emotional levels.

This application attempts to address some of the issues mentioned above and to render poetry accessible to students who are engaged in learning the literature of a community of speakers of another language.

ADDRESSING ISSUES VIA MULTIMEDIA

Talking Poetry is a video anthology of Hebrew poems by 20th century poets. The video anthology was produced by Edna Amir Coffin in Neveh Tsedek, an old neighborhood in Tel Aviv which was the home to many poets and writers at the turn of the century. The title *Talking Poetry* refers to both the mode of reading and discussion of the poems — it is done in an informal conversational style, using a very personal mode of reading and commentary. The program is hosted by two Israeli readers who both read and discuss the poems in various locations: in their garden, in a coffee house, walking down the streets of Neveh Tsedek and in other locations of interest. Kobi Medan, the principal host of this program, is a professional television host, who participated in the research for this video essay. The poems that were chosen for this program are poems which deal with relationships between "Him and Her" and between "a Person and Self."

The video was adapted to an interactive mode which can be used by an instructor in a presentation manner in the classroom or can be explored by students at individual workstations.

The primary goals of this hypermedia application are to:

- introduce students to poetry in an experiential fashion — to have them hear the poems read, read the poems and record themselves reading them, and have them pay attention to the sound, rhythm, and the individual phrases and words and their effect.
- offer the students tools with which to explore the unique features of the poems.
- offer the students all the help tools necessary to decipher the poems on both literary and poetic significance of the poem.
- acquaint students with poetic devices and traditions.
- introduce the poets to students and provide biographical information, anecdotes about their life and important personal documents by and about the poets.
- present the historical context in which these poems were written.
- provide materials for further study of these poems and other poems by individual poets.
- provide a bibliography of critical essays written about the poet or his/her poems.
- provide a basis for further individual research work by students.

STRUCTURE OF THE APPLICATION

Talking Poetry is modular in structure and includes the works of 11 poets. Each poet can be studied separately. An overall menu offers the student an opportunity to select the poet of their choice and also to view a general introduction to the entire application. Once students choose a particular poet, they are presented with a two tiered menu: one which offers them an opportunity to read, hear, and analyze particular poems (typically, there are two selected poems for each poet), and one which offers them an opportunity to explore the life of the poet, important events which influenced the time in which s/he lived, vignettes and memoirs of their life, and bibliography and general commentaries about their poems.

NATHAN ALTERMAN

Main Menu

The main menu has two main divisions:

1. Presentation of Poems
2. About the Poet, biographical, bibliographic, and historical references.

Students can choose to view items in the menu in any order they wish.

Figure 1. Main Menu. The choices here are between viewing the entire segment (with the reading of the poems and discussion of the poems) and between entering a secondary menu with readings, discussion, and analysis of the individual poems.

By clicking on the "Presentation of Poems," the user gets a secondary menu for viewing, listening, dictionary help, discussion, and analysis of esthetic devices and themes.

Figure 2. Presentation Menu. The choices here are between viewing and hearing the poems read (with dictionary help, recording function, and listening to the musical rendition of the poem, when available) and an introductory discussion of the poems.

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Figure 3. Poem Menu. The choices here are between hearing the poem read, or listening to its musical rendition. Students also have access to a dictionary and to a practice mode, where they can listen to lines of the poem and record their own readings.

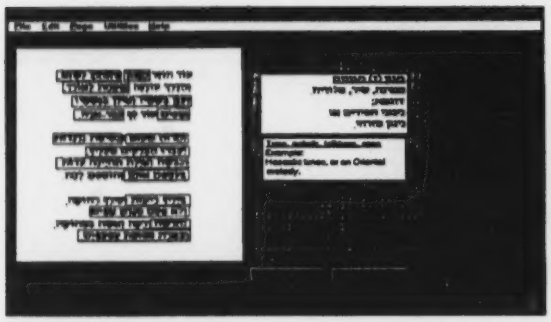

Figure 4. The Dictionary. The "hot phrases" are marked and by clicking on a hot phrase, a student can get an explanation in Hebrew and English with some comments on the literal and metaphoric use of that phrase.

Figure 5. Practice Screen. By clicking on a line or on a stanza, students can hear a reading of that line or stanza. There are recording opportunities for students to record themselves and compare their own readings to that of the native speaker.

Figure 6. Menu of Poetic Structures. After hearing the poem, using the dictionary and recording one's own reading, students are presented with the main poetic devices and schemes employed in writing the poem: meter, rhyme, themes, images, and intertextual links to other poems.

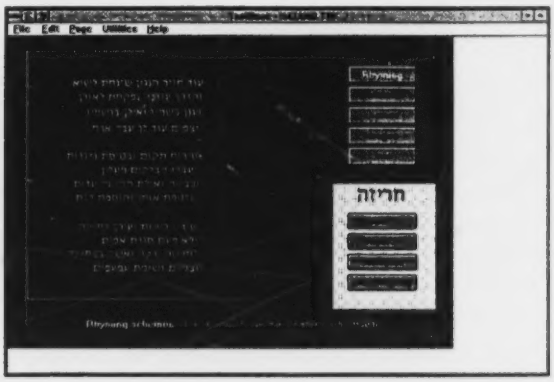

Figure 7. Rhyming. Students can explore internal and external rhyming schemes in this particular poem.

Proceeding to the Reading Segments menu (all the readings are in Hebrew, with dictionary support), students can view a timeline of important historical events during the period of the life of the poet, read a short summary accompanied by photographs about the life of the poet, explore highlights in his life, read and hear anecdotes told by those close to the poet about their encounters with him. They get a short bibliography that directs them to further exploration of the poet's works and the commentary and articles written about the poet's works.

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THE CREATIVE MODE

An additional third menu will be available to students, which will include more poems by the same poet and templates that will allow them to create their own exploratory lessons and to analyze and compare poems. This important part of the program, which provides true interactivity and creative efforts on the part of students, is currently in progress.

CLASSROOM IMPLEMENTATION AND INTEGRATION

The topic of the projected course at the University of Michigan is Modern Hebrew Poetry, from the turn of the century to contemporary poets. This course will integrate lectures, classroom discussion, as well as multimedia explorations and further research work. The multimedia explorations are seen as introducing students to each of the poets and further work will be done in class in extending the scope of the study beyond the specific poems included in the *Talking Poetry* application. Students will be assigned their own research and analysis projects, which they will do throughout the semester, and will present their own projects at different points during the course. These projects will be presented and discussed in the classroom, reviewed by student peers, integrated into the *Talking Poetry* software collection, and added to the students' electronic portfolios.

Students will work on their projects in groups using the CM to create their own EM application. Students will be evaluated according to their classroom performance and participation, but also on their final CM projects.

PRESENTER'S BIODATA

Dr. Edna Amir Coffin is the Director of Project FLAME and a Professor of Modern Hebrew at the University of Michigan. She is the author of several leading textbooks as well as numerous articles, and is the design team director of Project FLAME. She has received awards including the EDUCOM Higher Education Software and Curriculum Innovation Award for Best Humanities Curriculum Innovation (Foreign Language, 1993), and an IBM major grant (1990-1993). Most recently, Dr. Coffin has been awarded an NEH grant, and two U.S. Department of Education grants for the development of multimedia applications in Spanish, English, Russian, and Polish.

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R.E.AD.: READING EASILY FOR ADULTS. DEVELOPING A LEARNER CENTERED COURSEWARE WITH A COLLABORATIVE APPROACH: FROM THEORY INTO PRACTICE

MICHELANGELO CONOSCENTI, UNIVERSITY OF TURIN – ITALY

ABSTRACT

R.E.AD. (Reading Easily for Adults) is courseware for Italian true beginners of English — a six man year long effort of design and development work. It has been developed keeping in mind the issues presented by the author at the CALICO conference on "Assessment" in 1993. The presentation would like to point out the innovative aspects of the courseware–learner interaction, which is mainly based on collaborative learning techniques.

All activities have been developed on authentic materials strictly linked with academic and everyday life (determined by a needs analysis carried out before the courseware design) to let the learner reduce "affective" filter. The main core of the courseware is the dialogue it establishes with the learner. The interaction pattern has been developed starting from the assumption that learner–machine interaction should be mainly focused on the learner's side. The courseware is developed to enhance the learner's autonomy through "Learning to Learn Techniques."

The author, believing that natural language interaction with machines is far away from being obtained, has focused the courseware interaction pattern on a "mixed" model.

Pask's conversational theory has been used to keep the constant and reliable flow of information between learner and courseware, while Piaget's theory of learning has been adapted to direct learner's learning. The courseware design has been strongly based on textual linguistics theories and techniques mixed with recent semiotic models on "Text Understanding."

The courseware has already undergone some preliminary testing which shows interesting data on the possibility of obtaining true communicative language learning even though based mainly on written text. The presentation will mainly focus on the techniques developed to move from theory into practice (even though referring to the courseware itself) while an extensive presentation of the courseware will be given at the courseware fair.

PRESENTER'S BIODATA

Michelangelo Conoscenti is the Director of the Language Center at the University of Turin, Italy. His main interest is the development of learner centered materials involving the psycholinguistics aspects in the framework of learner and machine interaction. He has been a Consultant for the Commission of the European Communities as a specialist on CALL. He has also been the work group leader on "Learner Centered Materials" at the Lingua/Delta Conference on "Foreign Language Learning and the Use of New Technologies." He has published several articles on CALL and designed courseware used in various universities. He is responsible for two European based research projects on CALL.

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COLLABORATIVE LEARNING AND TECHNOLOGY AT ITHACA COLLEGE

WILLARD T. DAETSCH, ITHACA COLLEGE

ABSTRACT

During the 1994-95 academic year in my third and fourth semester German classes, I have undertaken several experiments in using technology to enhance the learning experience. Students have used distribution lists to exchange information and compose reports. Homework has been submitted to me via e-mail and has been corrected and returned via e-mail — a process whereby turn-around of work has frequently been a matter of hours rather than the usual two days to a week. They have singly and jointly used Bill DeSmedt's **Herr Kommissar** software. The capturing of their work which is possible with DeSmedt's software makes it possible to find easily the types of mistakes which are repeated and thereby to assist students on their specific problems.

Students have rotated the responsibility to write and distribute class notes after every class. These protocols give the entire class a quick reminder of work covered and also allows quick feedback if there are any questions. Other uses have been with **MacDeutsch** and materials from DLI, Transparent Language, PICS, and software which I have developed using **Libra**. The **Libra** software has given me and my students valuable experience in using laserdisc materials in depth and in a variety of ways. I will talk about these experiments and hope to have comments from the follor on what is being done by others.

PRESENTER'S BIODATA

Dr. Willard Ticknor Daetsch, Associate Professor of German and Linguistics at Ithaca College (1965 to date); Dana Fellow and Visiting Faculty at Carnegie Mellon University 1987-89 and 1990-92, Dr. Daetsch's pedagogical interests center on the intelligent adaptation of technology to the learning/teaching/research process in all aspects of language, literature, and cultural studies. These interests include use of CD-ROMs, laserdiscs, **QuickTime**, etc. He is the author of **Häger Der Schreckliche Lehrt Deutsch** — software which uses the German version of Dik Brown's cartoon *Hager the Horrible* to assist in learning to read German.

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HERR KOMMISSAR IN THE CLASSROOM II

WILLIAM H. DESMEDT, AMBER PRODUCTIONS
WILLARD T. DAETSCH, ITHACA COLLEGE

ABSTRACT

The presentation will begin by delineating the framework of the trial. **Herr Kommissar**'s conversation simulating capabilities will be briefly reviewed, with particular reference to their integration into the intermediate German curriculum. The trial population of students will be profiled along a variety of dimensions, including background in the German language, attitude toward computers and their instructional use, and motivation for learning German. Lastly, we will outline the methodology employed to assess the trial results, and the role played by the **Magister** performance analysis utility in that assessment.

The centerpiece of the presentation will be a detailed review of students' actual interactions in the **Herr Kommissar** learning environment, and a statistical analysis of the trends they manifest. On this basis, conclusions will be adduced regarding the impact of the **Herr Kommissar** experience on students' progress toward mastery of conversational German and the implications for further evolution of the software itself will be explored. Finally, the trial data will be viewed from the perspective of the light it may shed on the process of second language acquisition in general, and of the efficacy of performance tracking software like **Magister** in supporting research into that process.

PRESENTERS' BIODATA

William H. DeSmedt is the creator of the **Herr Kommissar** ("Mister Inspector") conversation simulator for intermediate German and its companion instructor's utility **Magister**. Holder of postgraduate degrees in Russian Studies (Harvard, 1971) and Computer Science (Fairleigh-Dickinson, 1981), Mr. DeSmedt founded amber productions in 1984 as a vehicle for the creation of innovative instructional software. A member of CALICO since 1988 and chairperson of its Special Interest Group on Artificial Intelligence for 1994-95, he is a frequent contributor to the ongoing debate over the prospects for intelligent computer assisted language instruction (ICALI), whose views were most recently set forth in a chapter on **Herr Kommissar** for the Army Research Institute's forthcoming volume on ICALI.

Willard Ticknor Daetsch, Ph.D., is Associate Professor of German and Linguistics at Ithaca College. A Dana fellow and visiting faculty member at Carnegie-Mellon University, 1987-89 and 1990-92, Dr. Daetsch's pedagogical interests center on the intelligent adaptation of technology to the learning/teaching/research process in all aspects of language literature and cultural studies. These interests include use of CD-ROM, laserdisc, **QuickTime**, etc. He is the author of **Häger Der Schreckliche Lehrt Deutsch** — software which uses the German version of Dik Brown's cartoon *Hager the Horrible* to assist in learning to read German.

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PRONUNCIATION MATTERS(!)

PHILIPPE DELCLOQUE, NAPIER UNIVERSITY – SCOTLAND

INTRODUCTION

In the 60s and 70s following the publication of Chomsky's "Syntactic Structures," the linguistics journals were full of discussions of linguistic ambiguity. The obvious pun in the title to this paper betrays the fact that the author was brought up in this tradition. My aim here is to discuss matters of pronunciation as well as reinforce the importance of pronunciation learning within a general language learning strategy. Computer technology, I shall argue, provides linguists with the most effective tool they have ever had for effective improvements of learners' pronunciation. My purpose will also be to show that this can happen even if tutors do not have at their disposal sophisticated (that is to say) intelligent hardware and software tools for pronunciation teaching and learning. After a very rapid survey of some approaches used in the field, I shall go on to describe the framework of my interactive pronunciation tutor for French designed for self access as well as classroom work and ultimately to be delivered for use on commonly available microcomputers from an IBM PC meeting the MPC 2 standard to a Macintosh LCII or better.

THE PLACE OF PRONUNCIATION WITHIN LANGUAGE TEACHING AND LEARNING

The gradual move towards an emphasis on communicative competence and the increase of languages taught to students of all disciplines have led to a decrease in analytical strategies in all areas of linguistic acquisition. This applies to grammatical teaching (both in its traditional normative and linguistic descriptive variations) as well as pronunciation teaching with a marked decrease in the inclusion of phonology/phonetics in the higher education curriculum.

This even applies to languages like French which are notoriously non-transparent and where spelling has been shown to have much influence on the acquisition of incorrect pronunciation, partly due to the large number of cognates (identically spelt words) which increase positive transfer from a lexical point of view but produce negative interference from a phonological point of view.

The assumption is made that good pronunciation will be achieved gradually through increased exposure to native models, especially via the crucial role of the year spent abroad.

Pronunciation is also perceived as being of secondary importance compared to other linguistic skills. Yet, few of us would deny the obvious, that it does have a significant influence on communicative competence. A good mastery of target phonology does boost confidence and a strategy designed to improve the pronunciation of a learner of French must therefore be beneficial to all areas of his/her linguistic acquisition and competence.

Pronunciation is often perceived as a linguistic skill from the production point of view. Tutors equate pronunciation acquisition with that of a near native accent. They perhaps neglect that many Anglophone learners of French who have gone through seven years of secondary schooling still cannot understand basic utterances spoken at normal speed by natives. Such examples might include */e la ve ty no tri de/Elle avait une autre idée*, a clear case where every individual word forms part of the active as well as passive learner knowledge.

Approaches to pronunciation teaching in the classroom have varied greatly from a complete absence of formal teaching in this area to degrees of incidental pronunciation advice or exposure to phonetics and phonemic transcription exercises, reference to textbooks on the subject to be used for self-study and more recently automated or semi-automated solutions (Delcloque 1995). Attitudes to the use of phonemic transcription have always varied greatly too. It is fair to say, for instance, that phonetics has always been used more to teach English to Francophones rather than French to Anglophones. In addition to this, as French is now taught to a large variety of students who range from linguists to other subject specialists and their exposure to language classes is limited as well as their targeted learning outcomes, it is often felt that phonology is a "luxury" which can ill be afforded within the curriculum. The extra mediation which phonemic transcription presents to the learner is felt to be counterproductive for

his/her speedy introduction to the French language. This however is counterbalanced by the need for all higher education modules to include a strong directed learning element to be provided in self-access.

What then of the automated approaches? In recent years, a number of experiments have been carried out, notably in the U.K. and U.S. by individuals or teams working at the leading edge of the spoken interaction side of machine intelligence. Often building on the strengths of speech recognition, some of the said approaches have yielded impressive results.

One of the most accomplished and well-known efforts was carried out under the auspices of the European Community Esprit Project called SPELL by, amongst other partners, the Center for Speech Technology at Edinburgh University. It led to a number of publications the most recent being "an automated system for computer-aided pronunciation learning" (Hiller 1994).

Other radically different approaches are represented by Stephen LaRocca's "ECOUTEUR project (LaRocca 1993). The above are just two examples for French. Many other scholars have produced valuable work elsewhere for a multitude of languages but, despite the falling costs of extra hardware and/or RAM required of such systems, such approaches, exciting though they may be, are likely to remain out of the reach of the average teacher of French for the remainder of the millennium. In that situation, what can computer assisted approaches using modest machines usefully contribute to effective pronunciation reinforcement?

It is in an effort to answer that question that I started working on designing a self access tutor to assist students of French in higher education. The initial prototype is targeted at Anglophone learners and builds (in reverse) on the contrastive analysis undertaken in my doctoral thesis (Delcloque 1978).

A NUMBER OF ASSUMPTIONS UNDERLIE THE DESIGN OF THE PROGRAM

Firstly, it is assumed that the most important element for an Anglophone learner to grasp in acquiring an acceptable pronunciation of French is a mastery of basic rules of rhythm including syllabic splitting, elision, liaison, and assimilation.

This places particular emphasis on what I choose to call macrophonology as opposed to microphonology (usually referred to in the linguistic literature as suprasegmental versus segmental features). This is a fundamentally different approach from the norm as practically all textbooks which I have seen so far insist on dealing first with individual speech sounds and their articulatory (sometimes acoustic) characteristics. It is indeed the way I was taught English and French phonology and there is a great deal of logical sense behind this approach. It consists in going from the specific to the global. It cannot however be described as expedient and may not therefore suit the need of the student who wants to spend little time on matters of pronunciation and gain maximum benefit. What the learner wants is to build rapidly an increased understanding (decoding) of the spoken chain and a noticeable improvement in his/her delivery of intelligible French speech.

The difference in approach is perhaps reminiscent of initial tuition in basic information technology (IT) skills. Almost every tutor I know teaches **DOS** before **Windows**, incidentally thereby putting off half of his/her audience. Wouldn't a global approach be more productive by demonstrating a more intuitive system felt to be more useful and relevant to the modern world? In this analogy, **DOS** stands for attention to detail and individual phonemes and features. It also stands for a non transparent mediation of reality.

By contrast, **Windows** stands for global semi-reality in the same way as splitting syllables in the right places in French will produce accurate fluency in the language in a more useful way than through too much attention to detail. So macro phenomena, usually left towards the final stages of tuition can now be brought to the fore, which reflects their relative importance.

This approach also relates well to the new trends in language learning which emphasize the use of tools available in the real world. Less than ten years ago, the language graduate would have to undertake translation examinations without access to a bilingual or indeed monolingual dictionary. We now do things differently, having realized that this was an entirely artificial procedure. In the same way, if a student wishes to know what the component phonemes of a word are, all s/he has to do is look it up in the trusted dictionary.

The dictionary may also include information on word stress (for relevant languages). What it will not do, however, is to tell the student how syllables are organized and what happens to the phonological structure of the word in context (elision, liaison, assimilation).

It therefore stands to reason that such information is of greater importance in the student's targeted learning sequence and should be presented to him/her sooner in the teaching program. In addition, it means that students could be faced early with a number of initial exercises placing emphasis on syllabic decoding. To use the same example as above, you could give the student the following sentence to transcribe phonemically

(using the dictionary) : *Elle avait une autre idée.*
The dictionary would yield : /el ave yn otr ide/
The correct split is : /e la ve ty no tri de/

In order to achieve this correct split, the student has to understand the principle of liaison, isosyllabicity (sometimes referred to as isochrony), and open syllabation. Those principles can be explained to the learner in less than 15 minutes in class, much less than it will take any student to memorize the new representation of individual phonemes.

Another type of exercise would involve the student being presented with continuous phonemic sequences which s/he would have to learn to split according to rules presented by the human or digital tutor, e.g. : /elavetynotride/.

Having told the students that there can only be one vowel per syllable and therefore every new vowel means a new syllable, it becomes very easy for the beginner to split this sentence correctly in his/her first lesson (after each vowel). This is no more complicated for a machine to teach and is the first design feature of this tutoring program. It immediately brings home the essential point that spoken and written French are almost different languages. That realization early on will, I hope, motivate the learner to delve deeper into the program.

My digital tutor combines a directed learning sequence with much hypermedia freedom. A series of default buttons guides the user through the suggested sequence. The user may therefore follow the guidance by merely clicking the enter/return button at the end of each exercise. This does not stop him/her navigating instead to other choices and links. The program is indeed designed to allow all levels of users to interact with it in a useful pedagogic fashion. It will suit surface as well as deep and/or strategic learners. It may therefore be a tool used by complete beginners as well as advanced students who wish to polish their pronunciation, learn phonemic transcription and pay attention to minute phonetic detail.

The theoretical underpinning comes from structural phonology. It does not describe acoustic phonetics or generative phonology although it does allude to it. This is because articulatory structural phonology is felt to be the most appropriate teaching tool. This is also borne out by all the text books on the subject.

The program starts with an explanation of its rationale and a description of the way it is structured. It also lists the learning outcomes and gives an indication of the time which could be spent on individual sections. It encourages the student to use the tool regularly, frequently, and in small doses. It then introduces two amusing cartoon characters who will serve as articulatory guides throughout the tutor. In keeping with the best Gallic tradition, their names are "Fonologie" and "Fonetix." The female character "Fonologie" is by far the most important. She provides all the explanations of distinctive speech sounds, features, and guides the student methodically through the most important learning outcomes. The male character "Fonetix," whilst amusingly resentful of this matriarchal domination, provides the attention to detail which some users may enjoy. Unlike the voices of "Asterix" characters, their diction is impeccable and pedagogic but humor is present particularly through the animation achieved in **Macromedia Director**. That will add to the motivational appeal of the program. I have yet to decide what the magic potion should be! The cartoon characters also help to give a concrete and visual quality to the theoretical difference between phonetics and phonology. At regular stages, the user is able to test his/her newly acquired knowledge by short quizzes and slightly longer tests.

There is also a general indicative test which precedes entry to the main program in the directed sequence. Students are encouraged to undertake this fifteen minute comprehension and production exercise which gives them scores in four categories which can be added to provide an overall score. It is also suggested that they should redo the same test several months later after using the program to ascertain what progress they have made in the interim period. Some elements of the test require human intervention for an intelligent and useful correction. This is partly due to the fact that the digital tutor is not yet able to analyze students' spoken renditions.

In order to facilitate the check by the tutor, the user is able to save vocal recordings onto a high density floppy disc. Vocal recordings deliberately involve full bandwidth to preserve quality of reproduction. They therefore use up a lot of memory. In future versions of the program, I shall try to provide automatic compression to fit more time onto a floppy. Present constraints are, however, acceptable (one minute of recording per disc) and involve very little user training. In my experience, students may be somewhat reluctant to record their voices in a large computer laboratory situation. This tool is designed largely for self access in separate cubicles for one or two users at a time. It is also meant to be used with quality headsets or if the user operates from a Macintosh base, using the standard microphone or the Plaintalk variety.

The user is given a brief lesson in sound editing using the Authorware tool (Soundwave) which is very intuitive. This has several advantages:

Firstly s/he is able to trim his/her vocal recordings to use up less memory and sound tidier.

Secondly, it focuses the user's attention to sound and its manipulation.

Thirdly, it is quite easy to point out syllabic breaks on the spectographic display, which helps the user visualize whether their syllabic split mirrors that of the native model.

Similarly, syllabic intensity/stress shows relatively well and may indicate negative stress transfer, a typical sign of Anglophone interference. This is another area of methodology which departs from the norm. Traditionally students have been expected to learn things rather than unlearn them! When it comes to word and sentence stress in French and English, it is easy to see that it is wiser to emphasize the "unlearning" of typical English word stress patterns.

I feel quite strongly that the student must be aware of the rationale behind any tuition method and of the learning outcomes envisaged by the designer. The user must also be given ways of testing his/her newly acquired knowledge. Language learning is such a slow process that the learner is often unaware of his/her progress and needs a form of semi-objective indicative assessment to increase his/her motivation and continue the good work. In addition to the scores in the four categories, the user is given a tailored report which indicates where they may wish to target their efforts.

Another feature of the design has been to think very carefully about the appropriateness of the type of medium used in the delivery of the pedagogic message to maximize communication and ultimate retention. The program includes practically every type of multimedia element from orthographic text, phonemic text, blanks and dashes, animated intonation marks, still pictures, moving pictures, animations and all kinds of interactions and exercises. The only missing elements are three dimensional images and virtual reality simulations, which would have been far too time-consuming given the constraints of this project and its suggested completion date.

There is also a large mix of pedagogic utterances by native models and authentic documents of all kinds. They range from film, television and video sequences to songs and poems all naturally reproduced with the copyrighter's consent. In this way, for instance, a famous speech by General De Gaulle is used to exemplify the function of emphatic stress, a song by Francis Cabrel is presented to illustrate the neutralization of the archiphoneme /ɔ/, Francis using the open variety consistently in all closed syllables. Both mid vowel archiphonemes have been selected as the most appropriate description of contemporary French, which has the advantage of minimizing the difficulties of phonemic transcription by reducing the overall number of symbols.

Other simplifications have been the merge of the nasal vowels in *"brin"* and *"brun"* and the front "a" of *"patte"* as against the back *"a"* of *"pâte."* Some interactions are quite novel such as the one designed to teach phonemes and their distinctive feature composition. Here the user is asked to select a list of features represented by text and icons and drag each into a basket. When s/he feels the correct selection has been made, clicking the check your answer button brings out a message: "You have x number of features right and x number of features wrong" (which includes missed features). This then becomes a game in which the user is not told how many distinctive features should be specified per phoneme and gets gradually guided towards the correct answer.

Syllabic division exercises posed another correction difficulty as they had to incorporate alternative clustering solutions in instances like *Il ne sait pas ce qui s'est passé* for which the possible list of correct phonemic answers is quite large depending on language level (*niveau de langue*) and the combination of elision, liaison, and alternative syllabic splits. The

program deals with this by including a form of mathematical bracketing in its answer field accepting alternatives as follows : /i(l)[ ](n)(ə) se pa[ ]s(ə) [ ]ki se pa se/. The blank between the two square brackets implies one optional space. What does this mean? Firstly the elision of /l/ commonly used in informal speech is allowed. So is the presence or absence of both /n/ and/or /(/ (Schwa representing the "e caduc"). In addition the /s/ can be tagged to the preceding syllable /pa/ or form a cluster with the next syllable /ki/ if and only if the e caduc disappears. We see here that an element of conditionality has to be introduced in the computation of the rule. The student of course has been taught all those rules but, because of the hypermedia freedom which the program gives, may never have looked up that part of the tutor. His/her renditions may well reflect his/her intuitive knowledge of those processes. At no time is the user aware of the answer field computation but correct alternatives are always accepted, a reassuring feature as learners find unintelligent responses by the computer a serious turnoff!

There is a specific part of the program which looks at those phenomena more closely and asks the student to rewrite syllabic division of some utterances on the basis of elision and "e caduc" rules. In that case the answer fields are limited to the relevant solutions. In that same part, utterances are heard with cases of omitted and present "e caduc" and users are asked to select or write the correct solution. Stimuli therefore vary from pedagogic well-articulated speech to authentic utterances, to orthographic and phonemic texts. There is a gradual progression in exercise difficulty which is reflected by the directed learning sequence suggested by the default buttons. Fundamentally, and unlike many text books in corrective or remedial phonetics, the approach used here emphasizes the use of authentic text, audio, and video documents bringing home to the user how important and relevant phonemic considerations are to real life communication both seen from a native and foreign viewpoint.

Other principles of design involve the use of total immersion by all visible screen elements appearing in French (supplemented with icons) while pop-up (help or explanation) fields are in the relevant source language (in this case English). This should also allow the long term adaptation of the tutor for speakers of other languages at limited cost. Contrastive elements are included throughout but they use separate modules triggered by specific buttons. This again is designed for future customization. The long term product will include an entry screen with a choice of support language. Speech elements in standard English Received Pronunciation (R.P.) are rare and simply given as part of the contrastive assistance, comparing for instance the two "i" phonemes in English compared to the single /i/ in French.

Animation rather than video sequences are used to illustrate the movement of articulators in the production of the main French phonemes. Future versions may include a small sample of real films showing cross and 3-D sections of articulatory organs in movement.

One of the much appreciated features of the early design is in the incorporation of navigational information on every screen and a background button leading to useful hierarchical navigational maps. The program has so many branches and is so complex that the user could possibly get lost in hyperspace. It is hard to see how this may happen given the navigational assistance provided. Another feature felt to be of great use is the systematic presence of dynamic links between the theoretical section on phonology called *"Le Systéme"* and the practical corrective section called *"Les sons du français."* The tutor was conceived as a tool which could be used by advanced learners purely to teach them the rules of French phonology and phonemic transcription as well as other levels of learners to assist with their acquisition of an acceptable pronunciation.

The program is not looking to achieve elusive seminative competence which often comes from pre-teenage exposure to the language or much time spent in the target country added to particularly good articulatory/mimicry skills and habits. It simply aims at achieving increased comprehension and much more acceptable production. Pre and post testing as described earlier should vindicate the usefulness of the approach despite the lack of truly intelligent responses from the machine.

Many would argue that there is only a place for intelligent tutors in pronunciation teaching and learning. Some may even say that the correction must be speaker independent rather than rely on some form of pre-training to use the much publicized advances in voice recognition. The issues here are in no way simple. Common sense would suggest that voice recognition cannot possibly help as the machine simply adapts to the idiosyncrasies of the learner and would therefore allow far too many unacceptable renditions. But it must be pointed out that we can

constrain the limits of acceptability under voice recognition in much the same way as we do when we listen to a foreign speaker using our mother tongue.

Equally, the process of recognition is made much easier in a remedial program as the possible answer field is highly predictable, so much so, that the machine can cope with "listening" to pronunciation problems from a selective viewpoint. In other words, intelligent systems such as SPELL will deal with one issue at a time, such as vowel or consonant quality/ syllabic splitting, stress, intonation, etc. Equally, much improvement can be achieved by an "unintelligent" but well-designed program of the kind described above. The immediate analogy which springs to mind is the age-old debate between the tenets of CALL and ICALL. There is little doubt that there are now useful CALL programs on the market so the death of CALL much predicted by the ICALL lobby can be said to be seriously premature and exaggerated. The truth is both sides of the field need each other as much of the progress made in CALL has helped ICALL and vice versa. Lessons were learnt early this century in the relationship between pure, applied, and strategic research and science. They find their relevance in this debate also.

The program also takes a serious look at the relationship between sounds and their inconsistent orthographic representation. Every module includes a button called "Sons/Graphies." The CD-ROM tutor will be accompanied by a book which I anticipate will be kept under 200 pages, cost very little, and be available separately. It will pioneer some of the unique features of the approach.

I expect to make a lot of revisions to the program after an extensive period of beta testing on both sides of the Channel and the Atlantic due to start at the beginning of the academic year 1995-96. I shall look forward to colleagues' comments and contributions during that period.

I also hope that this work will figure amongst those which help boost research and production in machine applications of pronunciation teaching and learning.

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PRESENTER'S BIODATA

Dr. Philippe Delcloque has been involved in instructional techology for over ten years and uses his mixed background in linguistics and audio engineering to specialize in multimedia authoring and computer assisted pronunciation training.

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¡ARRIBA AUDIO! — STUDENT PERFORMANCE AND ATTITUDE TOWARD INTERACTIVE LISTENING COMPREHENSION EXERCISES

SCOTT DESPAIN, NORTH CAROLINA STATE UNIVERSITY

INTRODUCTION

In a recent article, Peter Patrikis (1995) poses the question, "Where is computer technology taking us?" The same question might have been asked about the language laboratory several decades ago. The language laboratory of the 1960s, a necessary technology to accompany the audio lingual era of second language acquisition, has undergone many transitions as advances in technology have continued to develop at an ever increasing rate. Analog audio technology, including reel-to-reel, then stand-alone cassette players, student stations completely controllable from a master console, and now analog and digital video show an ever increasing refinement of these mediums.

With technological enhancements, adjustments in foreign language teaching methodology have also required a revision not only in exercise format and approach, but also in the instructional media, physical design, philosophy of purpose, and even the very name of the language laboratory itself. With this presentation, I will propose that we take an active role in influencing positive change in technology and teaching methodology by asking the opposite question: "Where are *we* taking computer technology?"

CURRENT TRENDS

Current trends suggest that in the near future listening comprehension and workbook exercises will be delivered primarily via the computer. Should this be the direction in which we take technology? Do digital exercises open or close doors to enhanced individual and collaborative learning? Research, such as the studies conducted by Wiley and Harnischfeger in the 1970s, shows that as time on task increases, student achievement also increases. Will students spend more time on task using the computerized digital listening comprehension exercises as compared with the analog lab manual/cassette version?

This presentation provides background related to the development, implementation, testing, and marketing of interactive listening comprehension exercises. It addresses the effects on learning and student attitude, time-savings, cost effectiveness, technological feasibility, and "time-on-task" differences between the use of computerized exercises and lab manual/cassette exercises for beginning Spanish language learners.

STUDY 1

Several phases of this project were conducted at Indiana University at Bloomington between 1990 and 1993. Initially, several student attitude surveys regarding the listening comprehension exercises using the lab manual and audio cassette were developed and administered to beginning Spanish students. Next, a computerized mirror image (the computer provided all text, audio, and reinforcement) of the listening comprehension exercises was developed using **HyperCard** as the authoring tool. Each of eight beginning Spanish sections was randomly divided into computerized, lab manual/cassette, and control groups. This study was conducted during two semesters, with minimal changes in the second repetition based on the first semester. Though subject count was sufficient and the instructional content and methodology were identical, the study was limited in scope because only one chapter's worth of exercises was used.

Attitude differences were found to be significant and positive in favor of the computerized version. Language proficiency differences were not significant. Given the limited instruction time, this second result should not be surprising.

STUDY 2

The second study expanded the project from one chapter to a full set of exercises to accompany **¡Arriba!**, the beginning Spanish textbook published by Prentice Hall. The computerized exercises were exactly the same exercises and audio as found in the lab manual and on the cassette. Each section of subjects was divided into two groups: the computerized, and the lab manual/cassette group. This second study focused more on how much time students actually used the two versions of the exercises, and the number of times each activity was completed or repeated.

SOFTWARE DESCRIPTION

¡Arriba Audio! (CD-ROM for the PC and Macintosh) represents the future industry wide in ancillaries. It is a computerized mirror image of the lab manual that accompanies the beginning Spanish text **¡Arriba!™**, published by Prentice-Hall. All activities, graphics, audio, and record keeping are computer-generated. The program provides immediate reinforcement, repetition and review, fosters collaborative learning, maintains all records and is a valuable research tool for second language acquisition research.

THE COMPUTER AS THE DELIVERY TECHNOLOGY

Using the computer as the medium of instruction students can, collaboratively with a study mate or individually, complete listening comprehension exercises in their student residence, the library or the language lab, and yet be guided in the learning process. When compared with the lab manual-cassette-language-laboratory instruction delivery system, computerized listening comprehension exercises provide more immediate visual and/or audio reinforcement. The latter delivery system delivers the instruction more economically, efficiently and quickly to multiple locations simultaneously. (And, we save several trees in the process.) Review and repetition of any activity of any chapter or the audio for any item is always available immediately to any number of students working together or separately from a central source to multiple sites on campus. The exercises can be completed/reviewed repeatedly as if being done for the first time.

This delivery technology also allows the instructor increased freedom to assign more focused listening comprehension exercise assignments based on individual student needs. For example, because any single activity is immediately accessible for any lesson, a student can be assigned to complete the first three vocabulary-building activities at the beginning of the chapter, two grammar exercises in the middle and one culture activity at the end of the chapter. Expecting that students would try to accomplish this type of assignment using an analog tape and lab manual is unreasonable.

AUTHORING TOOL

Authorware Professional 2.0 was chosen because it could meet the graphic, sound, and question/answer needs of the project. However, the most attractive aspect of the software that sets it apart from any other that we considered was its dual-platform feature. A project developed on the Macintosh using **Authorware Professional** can be "easily" ported to the **Windows** environment.

¡ARRIBA AUDIO! AS A RESEARCH TOOL

¡Arriba Audio! can potentially collect any data in which the researcher is interested. The amount of information available can be overwhelming. Data collected can include, time spent using the program, total time per chapter, time per activity, number of activities repeated, etc. It is also possible to monitor every action of the student, when it occurred, for how long, etc. Data collection can easily be modified as research needs and interests change.

INSTRUCTIONAL DESIGN

The instruction and reinforcement schemes are intentionally simple. The structure of the research requires that the instruction remain consistent for both delivery mediums. Many studies and meta-analyses, such as those by Kulik, et al. (1980), have attempted to show that student achievement improves using computer based instruction. Clark (1989), to the chagrin of many researchers, later refuted many of these studies. He suggested that the instructional medium was not the deciding factor that effected the increase in student achievement, but rather the changes made in instructional methodology and content.

This project was designed to ensure that content and instructional methodology were identical for both delivery mediums. Therefore, if student achievement differences occur, they will be the result of other factors. Time-on-task studies show that, in fact, as student time-on-task increases, achievement increases. Consequently, if one medium of instruction encourages a student to spend significantly more time on a task, then that medium of instruction should be the medium of choice.

CONCLUSION

Digitized ancillaries are possible, practical and do not overextend what is now the accepted standard in computer laboratories. Preliminary results suggest that, overall, students prefer, believe they learn more from, and tend to repeat the activities more often using the computerized listening comprehension exercises, compared with the lab manual/cassette. *¡Arriba Audio!* is a valuable research tool in second language acquisition research. *¡Arriba Audio!* also provides greater flexibility for instructors to make assignments based on individual needs without the delivery technology interfering in the learning process.

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PRESENTER'S BIODATA

Scott Despain is the lower division Spanish Language Coordinator at NCSU. He is completing his Ph.D. from Indiana University at Bloomington in the instruction of Hispanic language and literature, with a minor in computer assisted instruction. Previous research includes projects with computerized listening comprehension exercises using **HyperCard** as the authoring tool. Recent research focuses on the problems and solutions in the development of digitized ancillaries delivered using the networked computer as the medium of instruction, and their implementation into a large Spanish language program. **Authorware Professional** is currently his authoring tool of choice.

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KEYNOTE ADDRESS: MEETING THE TRIPLE CHALLENGE — LESSONS TAUGHT, LESSONS LEARNED

STEPHEN C. EHRMANN, THE ANNENBERG/CPB PROJECTS

ABSTRACT

The speaker will discuss howissues of collaborative learning, discourse, and multimedia relate to larger challenges facing postsecondary education. What are some of the most important lessons that we can learn from the experiences of other fields? Might our experience help us become institutional leaders as our colleges and universities struggle to respond to the Triple Challenge: improving learning outcomes for graduates, extending access more fully and equitiably, and controlling spiraling costs?

PRESENTER'S BIODATA

Stephen C. Ehrmann is a Senior Program Officer with the Annenberg/CPB Projects. He has overseen a number of funded projects involving foreign languages and collaborative learning. Today his work focuses on educational strategies that academic programs use to enrich quality and extend access while controlling costs. From 1978-85, Dr. Ehrmann was a Program Officer with the Fund for the Improvement of Postsecondary Education (FIPSE). His Ph.D. is in Management and Higher Education from the Massachussets Institute of Technology, where he also received Bachelor's degrees in Aerospace Engineering and in Urban Planning.

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GETTING YOUR WORK OUT TO THE TEACHING AND LEARNING PUBLIC: ISSUES IN MARKETING AND DISTRIBUTION

CAROLYN FIDELMAN, AGORA LANGUAGE MARKETPLACE

ABSTRACT

Language professionals are increasingly using the Internet to communicate among themselves by e-mail, by (almost) real time group discussion on the various "listserv" mailing lists, and by posting information in gopher, ftp, and Web server sites. We have become increasingly aware that some communications cross the line from professional discussion about materials to the "selling" of certain materials and services that we use in our work.

The controversy over commercial use of the Internet is growing. The Agora Language Marketplace was conceived in 1994 as a solution to the appropriate placement of information that markets to members of our profession. By moving this information to a commercial site we avoid the conflict of interest inherent in a university's indiscriminate or unwitting sponsorship of for profit activity. By positioning itself as a buyer's guide, the Agora Language Marketplace can also cater equally to all applicants. Most important, through Agora's Publishing Group, authors of low volume materials can market their materials efficiently and inexpensively.

This session will focus primarily on your needs in bringing your product to market while providing a basic overview of the service and current Internet business practice.

PRESENTER'S BIODATA

Carolyn Fidelman has degrees in French and Foreign Language Education from the University of Georgia and a second Masters in Education from Harvard's Interactive Technology program. While continuing to teach college French, Professor Fidelman spent six years developing interactive videodisc courseware as an independent producer for IBM, Spectrum Interactive, and Applied Learning, Inc. Her long time interests in teaching French culture, nonverbal communication, and promoting the use of multimedia in foreign language education led to a three-year FIPSE grant resulting in two sets of videodisc based materials called *In The French Body* and *In The German Body*. As Editor-In-Chief of the Agora Language Marketplace, Ms. Fidelman helps other authors seeking to distribute their work efficiently and inexpensively via Internet, web, and gopher.

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COURSEWARE INTEGRATION AND CURRICULAR SEQUENCING: A CASE STUDY FROM FRENCH IN ACTION

ROBERT FISCHER, SOUTHWEST TEXAS STATE UNIVERSITY

ABSTRACT

The presenter will discuss the integration of multimedia programs within a unified approach to foreign language acquisition. He will describe the ways in which lessons designed for listening comprehension, reading comprehension, and writing can be linked together to help students to accomplish sequential instructional objectives in first-year French classes based on **French in Action**. Initial evaluation of the use of these kinds of programs has shown encouraging results.

The multimedia lessons, made by means of already existing authoring programs including **Libra*** and **Dasher**, lead students from listening comprehension of preliminary chapter dialogues (seeded with pertinent language expressions); to reading comprehension of supplementary passages (amplifying selected topics presented in the dialogues); to free written expression about those topics. By focusing on thematically related course material in all of the programs and by providing appropriate instructional guidance and pedagogical support in each kind of program, the integrated sets of lessons enable students to acquire relevant language expressions and grammatical structures and to use those expressions and structures in written communicative situations.

NOTE

* *Supported by a grant from the Fund for the Improvement of Postsecondary Education*

PRESENTER'S BIODATA

Robert Fischer is Professor of French and Linguistics at Southwest Texas State University. His primary research interests lie in Applied Linguistics and CALL/multimedia design issues.

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RESOURCES FOR THE PROFESSION: A NEW MODEL

NINA GARRETT, LORI THOMAS, AND MARIA VOURAS
THE CENTER FOR THE ADVANCEMENT OF LANGUAGE LEARNING

INTRODUCTION

This presentation on the Center for the Advancement of Language Learning's Resource Center will describe the new facility and its services to the U.S. Government language community.

AIM AND SCOPE

The Center for the Advancement of Language Learning (CALL) was established by Congress in 1992 to strengthen language teaching and testing in the federal language schools. CALL provides a vehicle for sharing information; coordinates the development of course materials in less commonly taught languages; serves as a communication link in the federal language community; and sponsors the development of a unified proficiency testing system for the Government. In an era of shrinking budgets, CALL's goal is to ensure that resources are shared and duplication is avoided.

The Resource Center plays a pivotal role in sharing language learning resources and technology among federal government language users. The Center is not a language laboratory, but rather a unique central resource for computer based information which can be remotely accessed.

SERVICES

Search and Referral

The Center offers assistance to federal professionals who need language related information and materials and conducts in-depth searches to locate requested materials. Plans to become a reference point for language resources on the Internet are under development.

Software Demonstration Site

The Center collects technology-based language courseware and language-related software for users in the Government community to review. It offers hands-on demonstrations of the newest programs developed in government, academia, and private industry. It is a central facility where Government users can experiment with computer based materials intended for self-study use or as classroom supplements.

Authentic Materials

CALL is collecting cultural authentic materials from overseas for teachers and students of less commonly taught languages, particularly radio and TV programs that can be used in classroom activities and by the self-study student. CALL's goal is to obtain original studio-quality video as well as copyright permission from the holder or producer to use the material for educational purposes. Starting in Fall 1995, tapes will be digitized and made available to all users in the federal language community.

Language Tools

The Resource Center has a wide range of technology-based language tools to meet the needs of teachers, students, course designers, and translators. Among these resources is the Language Materials Database, a national inventory of pedagogical materials in over 1,000 less commonly taught languages. The database pulls together information on hardcopy and softcopy holdings which reside in the Library of Congress, the University of California library network, and the ERIC database at the Center for Applied Linguistics. Other resources include authoring software, such as **WinCALIS**, for course writers; multilingual font packages; and computer based translation aids.

CALLFAX

Starting in Fall 1995, CALL will have an automated 24-hour FAX service (CALLFAX) to provide customers with up-to-date information on materials available for demonstration and use at the Resource Center. To access a list of Resource Center holdings, or one-page descriptions of demonstration software, customers need only dial into the fax system by telephone and follow the recorded self help instructions. Customers are asked to enter their fax numbers and phone extensions. Materials requested are automatically transmitted to the customer's fax machine.

CALL'S ACADEMIC OUTREACH

CALL's Academic Affairs program strives to strengthen ties between government and academia. The program provides information to academia on U.S. Government language training and testing activities; sponsors an academic lecture series for the federal community; conducts professional development workshops with university instructors for government language teachers; and sponsors course development for critical languages. CALL is also sponsoring a series of nationwide colloquia with academia to encourage university curriculum/governance models that promote student attainment of advanced language proficiency. Following the colloquia, attendees are invited to participate in a CALL-hosted electronic bulletin board.

CALL's Resource Center hopes to expand remote and walk-in services to the academic language community, thereby strengthening the lines of communication between government and academia.

Following the overview of the Resource Center, Dr. Nina Garrett, CALL's Academic Affairs Coordinator, will discuss some of the pedagogical issues raised by such resources. What are the linkages between these vast and varied electronic materials and the ways we teach, or between these materials and our "conventional" classroom-and-lab-based materials? What kinds of materials should students access directly and which do we, as teachers, compile and mediate for student use? How do we calibrate our expectations of what a student will learn from technology-based courseware? How do we envision teachers making the most productive use of these technologies? Although careful integration of such material into our curricula will almost certainly result in changes to our methods, changes must be supported by research into the language learning experience that comes from these new approaches.

The potential availability of such massive resources also raises professional issues. There is more out there than we can hope to know, let alone access and use. Should we plan for greater centralization or indexing of materials? What capabilities do we need to accomplish this task? Should grants seek to address "order from chaos" issues?

We should plan for a future in which these technologies will become the catalyst for a more widely shared model of language teaching, once teachers in remote areas have equal access to materials available in cosmopolitan centers, and once the *paths* to resources are the same whether for academic, government, or business language learning.

PRESENTERS' BIODATA

Nina Garrett is the Center for the Advancement of Language Learning's Academic Affairs Coordinator. She has a Ph.D. in Second Language Acquisition and Teacher Education from the University of Illinois. She has taught German and French at secondary and postsecondary levels, as well as graduate courses on second language acquisition theory, language pedagogy, and language technology.

Lori Thomas is the Director of CALL's Resource Center. She has been a government linguist for the past 12 years.

Maria Vouras is a researcher and technical advisor at CALL's Resource Center. She is a Computer Sciences Corporation employee under contract to CALL.

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BEYOND THE TUTORIAL: INTEGRATED TASK AND TOPIC

BRIAN GILL, UNIVERSITY OF CALGARY – CANADA

ABSTRACT

My paper presents a pilot program for teaching intermediate college French with the following characteristics:

1. it is accompanied by a textbook (rather than the reverse);
2. written in Multimedia **ToolBook**, it is **Windows** based and uses hypertext;
3. it makes extensive use of sound;
4. it offers more grammatical and lexical information than the traditional textbook, in an easily accessible format, taking full advantage of hypermedia;
5. it provides quick check and tutorial style exercises as well as pretests and posttests for each lesson;
6. it provides a corpus of texts in French which can be searched (e.g. to confirm or infer rules or study usage);
7. it incorporates a novel task topic approach which is open ended, and has printed output for the instructor evaluation.

Conceived of as an integrated package, the program seeks to link CALL with more traditional classroom instruction in a way that is non threatening to instructors. Using the textbook, the instructor determines the topic of study and the task to be done. Students then use the program either at home or in the lab, individually or collaboratively, to prepare for and then accomplish the task. Pretests and posttests allow them to check their assimilation of material before going on to the task itself. When this is completed, it is printed out for the instructor to mark in the traditional way, making it unnecessary for him to even see the program if he does not want to. Tasks would usually be writing assignments, using the built-in editor, but could also be quizzes, or research based, using the corpus of texts.

Philosophically, the program aims to combine the advantages of learner control, which the buttons and hotwords of hypertext are ideally suited to encourage, with the teacher guidance and the motivation that a task oriented approach offers.

PRESENTER'S BIODATA

Brian Gill has a Doctorate in Linguistics, teaches French at the University of Calgary (Canada), and presently co-edits the *Alberta Modern Language Journal* for the Alberta Teachers' Association. In the area of CALL, he has produced a stand alone program, **ANALYSE**, to teach grammatical analysis, as well as many CALL lessons for French using the **CALLGEN** authoring program. His recent work includes a paper evaluating textbook software for French (Victoria, Canada 1993) and one on learning styles and locus of control (CALICO International Symposium, Budapest 1993). He spent a recent sabbatical in Spain working on the present project.

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LEARNING AIDS FOR THE LESS COMMONLY TAUGHT LANGUAGES

ERIKA H. GILSON, PRINCETON UNIVERSITY

INTRODUCTION

Instructional technology will undoubtedly be an essential component of any language program of the 21st century. However, use of multimedia technology is crucial *now* if we are to afford instruction in the less commonly taught languages (LCTLs) at American academic institutions which are chronically — now and will be for the foreseeable future — short of qualified language teaching faculty and up to date, authentic teaching materials. For the teaching of the LCTLs, supervisors of language programs and teachers of LCTLs need to appreciate and welcome the advantages offered by multimedia technology, and to work with it.

Current plans for the development of Turkish courseware, with emphasis on instructional versus information technology, will be described and several learning aids for the Macintosh platform already in use will be presented. Two of these are **HyperCard** stacks[1]: **VocabBuilder**, designed to aid memorization, and **SoundDrill**, an interactive drill to enhance listening comprehension. Further, a commercially developed program, **The Rosetta Stone™**, used as a template for Turkish materials, will be shown. The design of these aids will allow for easy adaptation to other Turkic language instruction.

NEEDS OF THE LCTLS

The teaching of the LCTLs in the current academic setting is no easy task. These are "truly foreign" languages (Walton 1992), difficult to acquire as they usually are of a different typology as well as culture. Demand has been mostly sporadic, often depending solely on geopolitical realities, so that the resources — human and monetary — to develop a comprehensive curriculum for these languages have been absent. There is no tradition of teaching most of the LCTLs to speakers of other languages. Instructional materials, when available, are usually text based only, and out of date, both from the viewpoint of content as well as pedagogy. Usually, there is no native speaker accessible to the learner, and there are few, if any, culturally authentic resources readily available. At the same time, there has been a major shift in foreign language instruction in academe to the skill paradigm, i.e., teaching languages for "performance." The challenges thus faced by teachers of the LCTLs are immense; but so are the opportunities to introduce current methodology and instructional technology to language instruction: it is after all easier to rethink language teaching and implement new syllabi for a LCTL than to change the course of a well established French program with several hundred students.

NEW INSTRUCTIONAL MODELS

New instructional models are needed at institutions of higher learning to meet the needs of today's language learners and to provide language instruction which is effective and efficient. Such a model has to place the learners and their needs at the center of attention. It must be kept in mind that these learners are adults at academic institutions, and that they are capable of managing their own learning provided that focused learning opportunities which facilitate the "learning process" are offered together with linguistic and cultural input (Spolsky 1989).

For the LCTLs such as the Turkic languages for which there is limited demand coming from a geographically widely dispersed clientele, electronic courseware promises to be the most suitable model (Figures 1a and 1b). With the advent of interactive multimedia technology and desktop video conferencing the language learner has the opportunity to experience and acquire a foreign language on his or her own terms, whether instruction is available in the traditional setting or via distance learning delivery.

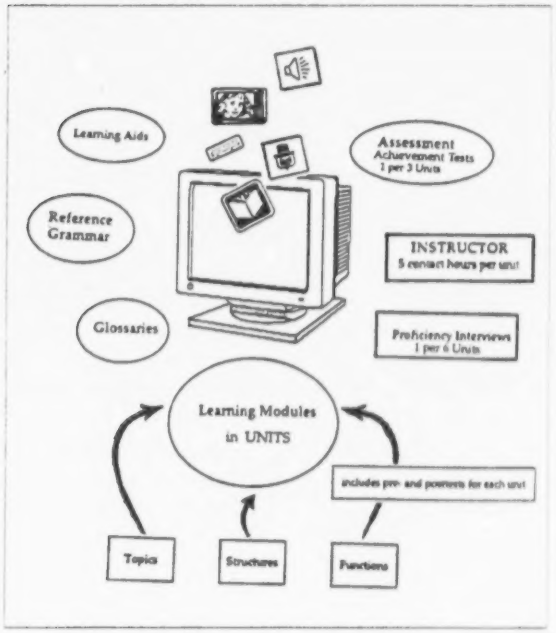

Figure 1a. Electronic Courseware: On Site Utilization Model

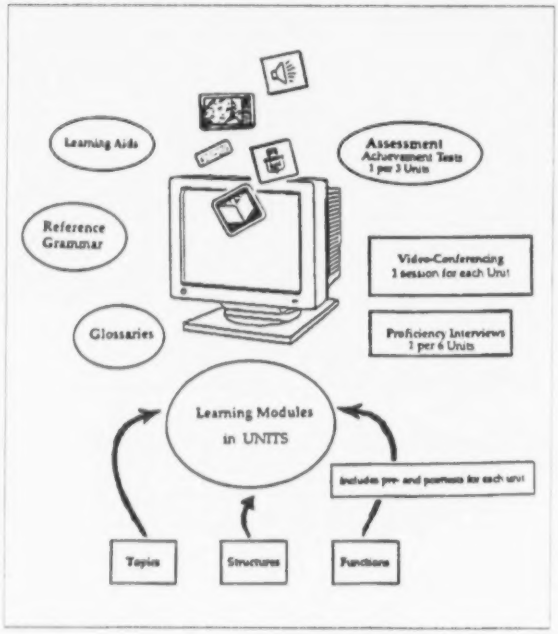

Figure 1b. Electronic Courseware: Distance Learning Model

The most crucial components of the proposed electronic courseware for language learning are the built in flexibility in sequencing the Learning Modules according to need or preference, and the "learning" mode imbedded in the modules and learning aids. Learning takes place by focused selective attention (Sato and Jacobs 1992). Intentional and strategic use of declarative linguistic knowledge informs and improves the planning and monitoring activities of the brain; it enhances the direction of focused selected attention to the relevant features of the linguistic system in language input and output. The cognitive learning process espoused in higher education does have a place in adult language learning and needs to be stimulated and enhanced (Robbins 1992).

The courseware is envisioned to include four different modes. The Browsing Mode will have digitized non linguistic as well as linguistic "information" available; in the Tutorial Mode the grammar — "facts of the language"— is presented; in the Learning Mode learners focus on "processing" the target language; in the Testing Mode the degree of success at processing the language is established. Developing programs that facilitate the learning process, that is, programs for the Learning Mode, is considered a priority at the present. Also, an urgent consideration all along has been to benefit as much as possible from existing programs if they are considered to be suitable for adaptation to the LCTLs to avoid duplication of effort and cost.

The guiding principle behind starting with a memorizing aid was the apparent universality of "memorizing" knowledge, a long tradition which is finding substantiation in recent neurobiological research (Robbins 1992).[2] Learning of new items is clearly tied to "placing it in memory," especially when the new language is not a cognate language. It is further well attested that in assessing foreign language competency, vocabulary is the "multiplier," the deciding factor in the 0-2 ILR or novice–intermediate ACTFL range; thus vocabulary acquisition holds the key to swift progress along the proficiency scale at the elementary levels.

Vocabulary acquisition is totally learner dependent; the language instructor can do no more than provide the best possible tools and aids for the learner to facilitate the learning process, and motivate and stimulate the learner. To provide such an opportunity for learning, we have the **VocabBuilder** which lets the learner build directly on his or her existing subjective lexicon.

BEST COPY AVAILABLE

Another important aspect of language learning is sound discrimination. Also noted by adult language learners as crucial during the early stages for developing listening comprehension is the connection of sound to written representation. The learner needs to hear, recognize and distinguish the sounds of the language before she or he can comprehend the morph, interpret it, and respond. Both **SoundDrill** and **The Rosetta Stone™** provide the learner with focused exposure to the sounds of the language. The different approaches of these two programs provide diversity, in format as well as content, and encourage more time spent on task, a "necessary condition" (Spolsky 1989) for language learning.

DEMONSTRATION OF LEARNING AIDS

VocabBuilder

The **VocabBuilder** stack is a memorizing aid which presents the learner with randomized items in the target or native language, with access to the translation, to study and review in five different formats on a daily, weekly, and monthly basis. As items begin to transfer into the learner's long term memory, the learner graduates by testing his or her control of the items. Mastery is demonstrated by consistent production of the learned items. Items graduated are replaced by new data hidden within the stack.

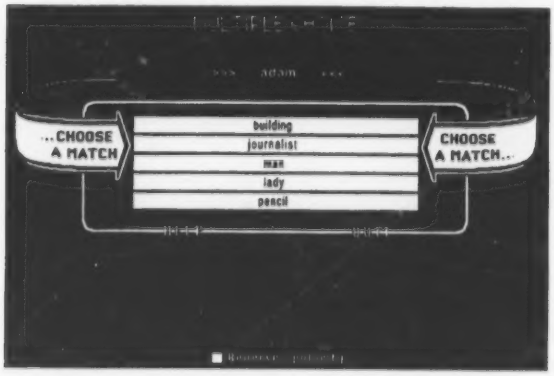

Figure 2. Interface of the Multiple Choice format

The contents of the **VocabBuilder** can be readily customized to incorporate any vocabulary to be memorized. At this point, the program can handle any language written left to right for which a font is available. The vocabulary incorporated in the **Turkish VocabBuilder** is based on the *Draft Minimum Vocabulary List* of the American Association of Teachers of Turkic Languages and includes about 1200 items. Although this sample is programmed to complement a first year language course, it is entirely learner driven, allowing students at any level access to the master stack by quickly reviewing and graduating from the given sequence.

SoundDrill

*Figure 3. **Sound Drill** Interface Sample*

SoundDrill is a "matching" drill stack incorporating sound (Figure 3). The sample **Turkish SoundDrill** contains about 112 high frequency phrases. The program is geared for learners at the novice through intermediate level. The learner listens as often as necessary to randomized high frequency utterances in Turkish recorded by male, female, young and old voices, and checks his comprehension by pointing to an appropriate response. The learner is free to move within the stack and listen to the different groupings as needed. Although there is text based visual reinforcement, the emphasis is on listening comprehension.

Turkish SoundDrill is programmed to complement an elementary Turkish language course. The stack is loosely arranged by functions and is entirely learner driven. It can help refresh listening skills of learners at any level.

BEST COPY AVAILABLE

THE ROSETTA STONE™

The Rosetta Stone™ is a multimedia language program developed for the commonly taught languages. Although the curriculum of the program and the visual prompts are not always appropriate to typologically and culturally different languages, the basic approach is sound and includes audio visual and textual input as well as a facility for the learner's recording of his or her own pronunciation. The program is easily adaptable, making its use as a template feasible. Some units as used for Turkish will be part of the demonstration.

NOTES

1 The programmer for these stacks, **VocabBuilder** and **SoundDrill**, was Douglas E. Ivers.

2 We were also guided by the self professed strategy of language learners: 64 students at Princeton, both undergraduate and graduate, beginning to study one of the following languages responded to a survey on language learning strategies in the Fall of 1990: Arabic, Modern Greek, Hebrew, Japanese, Persian, and Turkish. Of the strategies learners mentioned for vocabulary acquisition, memorizing of vocabulary items with the use of flashcards was listed most frequently.

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PRESENTER'S BIODATA

Erika H. Gilson, Lecturer of Turkish at the Near Eastern Studies Department of Princeton University, is interested in the development and delivery of effective models for instruction in the Less Commonly Taught Languages.

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THE NEXUS PROJECT: COMPUTER AIDED INSTRUCTIONAL DEVELOPMENT BASED ON INSTRUCTIONAL TRANSACTION THEORY

SCOTT HART, R. KENT WOOD, AND RAMON REISER, UTAH STATE UNIVERSITY

ABSTRACT

The NEXUS CID (Computer-based Instructional Development) tools are a product of a three-year federal grant to provide software tools and resources for public educators. The CID environment is an adaptation on Instructional Transaction Theory with some allowances for langauge training needs. Much effort was expended in designing a simple and effective interface that requires a minimal investment in learning how to use the software.

This presentation will begin with a brief overview and history of Instructional Transaction Theory followed by a demonstration of the newest generation of tools developed at Utah State University's Laboratory for the Experimental Study of Instruction (LESIN) bythe NEXUS research team.

PRESENTERS' BIODATA

Scott A. Hart is a doctoral student, instructor, and research Co-Director at Utah State University. He is a graduate of the Defense Language Institute (DLI) and winner of a national educational programming competition.

R. Kent Wood is Professor and Coordinator of the Laboratory for the Experimental Study of Instruction (LESIN), Department of Instructional Technology at Utah State University.

Ramon Reiser is a Research Associate with the NEXUS Research Group in the Department of Instructional Technology at Utah State University. He is an editor of **NEXUS-LEX**, a Chinese-English Dictionary and hasworked as a military instructor of interrogation and Mandarin Chinese.

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SETTING UP E-MAIL IN JAPANESE ON THE INTERNET

KAZUMI HATASA, ATSUSHI FUKADA, AND PETER HENSTOCK, PURDUE UNIVERSITY

ABSTRACT

The use of Internet is rapidly increasing. Language instructors are beginning to use the Internet environment for instructional purposes. While sending messages in European languages is relatively easy, a languages such as Japanese poses a challenge because of the special two-byte code necessary. Although there are a number of individuals outside Japan who are successfully sending and receiving messages in Japanese, very little systematic effort has been made to help language instructors and learners start exchanging e-mail in Japanese. The purpose of the present project is to survey the current state of Japanese e-mail and to develop a guideline which helps non technical users to set up a Japanese e-mail environment easily and inexpensively.

While all host machines in Japan are using localized versions of an operating system such as UNIX, we must assume that host machines outside Japan are not and that computing centers generally do not like to modify host machines. Besides, such request requires technical expertise that many of the users do not have. They simply want to read and compose messages in Japanese as transparently as possible from their office and home.

This presentation will describe technical issues related to the creation of Japanese language support in host machines and microcomputers. In the end, possible solutions will be proposed (e.g., **Eudora/J** with **POP**).

By the time of this presentation, we should have a technical report which describes various issues. It should also contain a letter addressed to computing centers detailing what we are interested in doing, how we would like to accomplish it, and, most importantly, how computing center can help us.

PRESENTERS' BIODATA

Kazumi Hatasa is an Associate Professor of Japanese at Purdue University. He published articles in *CALICO Journal* and has developed a series of Japanese freeware such as **Hiragana and Katakana** and **World Geography**.

Atsushi Fukada is an Assistant Professor of Japanese at Purdue University. He has developed **Computer-Assisted Technical Reading System (CATERS)** to help learners read technical Japanese.

Peter V. Henstock is a Ph.D. candidate in electrical Engineering at Purdue University. He has developed freeware **AutoGloss/J** for automatic generation of glossary list from Japanese text.

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LANGUAGE LEARNING 2000: THE MARRIAGE OF COMPUTERS AND COLLABORATIVE LEARNING

LT. COL. PETER HEINZ AND LT. COL. JILL M. CROTTY, UNITED STATES AIR FORCE ACADEMY

ABSTRACT

For over 10 years, the U.S. Air Force Academy (USAFA) has been at the forefront of interactive videodisc (IVD) development in the second language acquisition field. Using USAFA designed templates, over 25,000 student hours of IVD instruction is presented annually to approximately 1000 students studying one of four languages at the Academy. Under its Language Learning 2000 initiative, USAFA is currently developing a second generation state of the art language learning center, and has embarked on cooperative efforts with HRB Systems to develop significantly enhanced IVD templates. These templates incorporate digitized speech and graphic files, relational databases, and have an extensive capability to handle languages with non roman orthographies.

This presentation will demonstrate how these templates are used at USAFA, and will show how the Academy has addressed critical classroom language lab integration issues based on over ten years experience. The presenters will directly address how IVD instruction can best be structured and utilized to maximize its pedagogical impact on language education. The presenters will further show how the proper application of IVD technology can serve to enhance student centered instruction and empower active, dynamic instruction.

Finally, the presenters will illustrate how the USAFA IVD model truly enhances collaborative language learning among students, and in turn can become a powerful instruction and research tool. Under USAFA's Language Learning 2000 model, educators will also be to aggregate critically needed data that can significantly further the state of IVD development, computer based instruction and assessment, and inform and enrich the second language acquisition database.

PRESENTERS' BIODATA

Lieutenant Colonel Peter J. Heinz is currently Associate Professor of German and is the Chief of the French and German Languages Division at the United States Air Force Academy where he has been closely associated with interactive video development efforts. Lt. Col. Heinz's Language Learning 2000 initiative set the pace for future IVD development at the Academy, and he recently designed and oversaw construction and installation of the Academy's premier, second generation Language Learning Center. He received his Ph.D. from The Ohio State University in Foreign Language Education in 1993, and has written articles and made several conference presentations on computerized second language reading comprehension assessment.

Lieutenant Colonel Jill M. Crotty is currently the Deputy Head of the Department of Foreign Languages at the United States Air Force Academy. She received her Ph.D. in Curriculum and Instruction (emphasis on instructional technology in second language acquisition) from the University of Kansas. In addition to her administrative duties, she oversees the French curriculum and is responsible for the Academy's premier Language Learning Center.

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FOREIGN LANGUAGE INSTRUCTION STATION FOR WINDOWS (WINFLIS): INTERACTIVE GRAPHICAL QUESTION TYPES FOR CALL

GEORGE HENRY AND ROBERT ZERWEKH, NORTHERN ILLINOIS UNIVERSITY

ABSTRACT

Foreign Language Instruction Station for Windows (WinFLIS) is a **Windows** hosted CALL development and lesson presentation system. Its strengths lie in the areas of a flexible template based lesson authoring system, generous use of digitized authentic speech, support for the unique requirements of Southeast Asian languages, and innovative question types. **WinFLIS** can also (optionally) be linked to a standalone dictionary system with digitized sound and pictures.

This presentation will both demonstrate the **WinFLIS** system for the first time at CALICO and concentrate on the theme of the importance of task based question types which involved the student with the L2 material. Recent advances in the ability to *present* multimedia authentic L2 materials in a windowing environment have seemingly not led to a similar interest in the new kinds of interactive *tasks* that these new facilities can support.

One new question type (task) which we will demonstrate might be described as "virtual total physical response." Learners respond to questions or commands by manipulating pictures of objects on-screen. A typical question might show a table, a chair, a shelf, a book, some plates, and a radio. The student would hear (or read) a command: "put the book on the table" and then use the mouse to carry out the command. This question type has important implications for the practice and evaluation of listening comprehension, since it requires no L2 production at all.

Another question type is "word drag-and-drop." In questions of this type, learners see syllables, words, or phrases on-screen, and choose from them to form a written answer by dragging the text "chunks" with the mouse. This question type falls nicely between multiple choice (recognition only) and short answer (complete open-ended production). Typing errors are entirely eliminated, which is particularly important for non-roman orthographies.

Finally, a prototype speech recognition question type will be discussed.

PRESENTERS' BIODATA

George M. Henry, Ed.D., Associate Professor, Computer Science Department, Northern Illinois University. He has been active in the field of CALL since 1983, and has developed three generations of audible CALL for Southeast Asian languages. Other work includes development of answer markup software for Southeast Asian languages and a concordance program customized for romanized Thai.

Robert A. Zerwekh, Ph.D., Associate Professor, Computer Science Department, Northern Illinois University. His research interests are in the areas of neural networks and intelligent tutoring systems. Recent work includes the role of chief programmer for the multimedia electronic dictionary for Thai and Indonesian, and extensions to certain aspects of the **Windows** user interface.

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GUIDED VIEWING: THE MEDIUM IS THE META-MESSAGE

DAVID HERREN, MIDDLEBURY COLLEGE

ABSTRACT

Guided Viewing is another in the series of templates created by the presenter for producing courseware materials for the teaching of languages. In this presentation, the presenter will demonstrate the use of the template to produce media based annotations of still and/or moving images. Annotations are created using a remote control metaphor, requiring very minimal technical expertise on the part of the instructor.

For the newly initiated, the nature of each of the technologies supported — CD-audio, videodisc, digital audio, digital video, text, graphics, and PhotoCD — will be briefly demonstrated in the process of actually creating an annotation of a still or moving image. Annotations will be created for an entire image or video clip, plus, the full range of annotations will also be applied to non intersecting regions within the image, or, to any frame or series of frames within the larger image context.

Guided Viewing fully supports **WorldScript** technology, and as such is equally capable in the western and non Western languages such a Arabic, Chinese, Japanese, and Russian.

PRESENTER'S BIODATA

David Herren is Special Assistant in Technology to the Vice President for Languages and Director of the Language Schools at Middlebury College. He has been involved with language pedagogy and technology for over 10 years, and is the author of a series of templates for the production of computer based courseware in language education.

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EL ESPEJO ENTERRADO APPLICATIONS: AN INTERDISCIPLINARY APPROACH TO LANGUAGE, HISTORY, AND CULTURE

STACIE HIBINO AND GONZALO SILVERIO, UNIVERSITY OF MICHIGAN

El Espejo Enterrado (the Buried Mirror) Exploratory and Creative Mode multimedia applications form part of an interdisciplinary approach to learning the language and interpreting the history and culture of the Spanish speaking peoples, based on a five hour video essay by Carlos Fuentes. In the Exploratory Mode, students gather and integrate information for completing class projects. The Creative Mode provides tools and templates for completing projects, expanding existing Exploratory Mode units or creating new ones. Pedagogical models, including some sample illustrations are described, and classroom implementation in an undergraduate educational setting is discussed.

INTRODUCTION

El Espejo Enterrado is a video essay written and narrated by the Mexican writer and social commentator Carlos Fuentes. The series of five video programs tells the story of Spanish and Latin American civilizations from the beginnings of recorded history (e.g., Paleolithic Spain, Maya Mexico) to the present time. The video series was funded by the Quinto Centenario of Spain and the Smithsonian Institution. It was first broadcast on the Discovery Channel in the spring of 1992.

This video essay forms the core content narrative of our applications and thus determines their design and objectives. The central concern of the **El Espejo Enterrado** series is to point out both the diversifying and unifying aspects of the past, present and future of Hispanic culture. History, from Carlos Fuentes' point of view, is a dialogic narrative told by many different voices, each new voice adding an analytical challenge to the prevailing synthesis. History, comprising both actions of kings and rituals of peasants, leaves its mark on everything, and everything, then, is a valid object of interpretation: cathedrals and sonnets, pottery and songs. History, finally, is a moral tale, always incomplete, always partisan, only true when open ended. In keeping with these ideals, our goal was to design an environment where cultural "proficiency" was a result of acts of interpretation rather than data assimilation; participation in a dialogue rather than reception of a monologue; active building of communal knowledge databases rather than passive browsing of previously existing ones. In this environment, the students' points of view would be continuously challenged by others', even as the student challenges them in turn. Finally, the students were provided with the necessary tools to make it possible to work within the target culture in the target language.

With this central narrative as an axis, then, the goal was to provide students with a framework for structured exploration and tools for multimedia composition and development. The exploration framework is called the Exploratory Mode (EM) while the multimedia tools form the Creative Mode (CM). The following sections describe each of these modes in more detail. These descriptions are followed by a discussion of classroom implementation.

THE EXPLORATORY MODE

Each EM application treats an historical event (e.g., The Conquest of Mexico), integrating a video narrative with art, literature, geography, history, and music. The EM applications have three primary components: Video, Text, and Topics. In Video, students review a chapter of the central video narrative. In Text, students access links to the main narrative that clarify or contextualize it. These "hot text" links provide students with additional information such as biographies, witness accounts, maps, portraits, murals, newsreels, recordings, etc. (see Figure 1). The Topics, accessible though a Topic

Palette (see Figure 2), go beyond the main narrative by treating subject matter which was not explicitly touched upon by the narrative. Types of topics include: historical timelines, hypermedia biographies, guided exploration of artworks or poetry, comparisons of artwork and prose, testimonies of witnesses to polemical events, etc. Figure 3 shows a sample topic in which the students explore and interpret a Nahuatl codex.

Figure 1. Text screen. The main narrative video is displayed in the upper left, transcription (including hot text links) is displayed below the video window; information such as bitmaps and explanatory text obtained from clicking hot text appears on the right side.

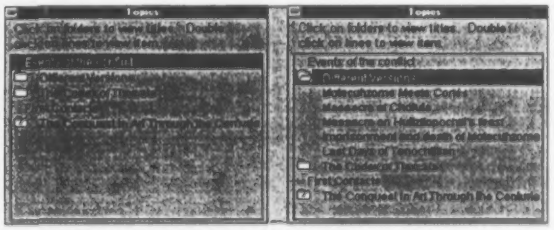

Figure 2. Topic Palette. Obtained from pull down menu, it displays the available Topics in an application. By clicking on a closed folder the titles of the contained Topics are displayed. By clicking on a line without a folder the Topic itself is launched.

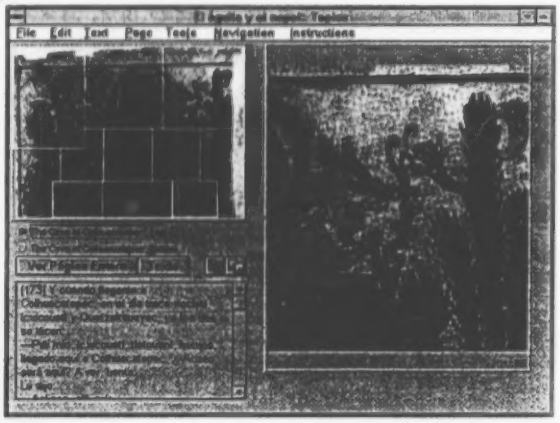

Figure 3. Sample Topic Screen. In the upper left, a portion of a codex is displayed. Students can zoom in to details of the codex by clicking on the highlighted areas. The detail appears on the right hand side. The text of a 16th century reading of the codex appears in the lower left. Students interpret both the codex and its reading, storing comments and media references in their media notebook.

Throughout a given EM application an Objectives Notebook containing guidance input by the instructor is also available to the student. This guidance is context sensitive, allowing the instructor to direct the student's focus at any given point. The EM applications are further enhanced by Reference, Media and Bibliographic databases. The Reference Database is a multimedia reference of historical, literary, and artistic terms. The Media Database is a collection of all graphic and aural media used in all of the EM applications. The Bibliographic Database is an annotated bibliography of references used in the EM applications. All of these databases are cumulative, multi-indexed databases which are continually updated by original EM authors, including students. Additionally, the EM includes two sets of on line dictionaries, a Reading Dictionary and a Writing Dictionary. The first defines words in the application within their context, the second one (**Atajo**, by Domínguez, Noblitt, and Pet) is a more extensive dictionary geared towards composition.

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Students review the main narrative (i.e., Video) of an EM unit and then select a Project (see Project Palette in Figure 4) to guide their explorations. Projects can include writing a personal interpretation via role play, creating a class multimedia magazine, or designing a virtual multimedia exhibit (e.g., virtual art gallery, see Figures 5 and 6). Students collect information from the EM unit, Reference and Media databases, using their on-line multimedia notebook.

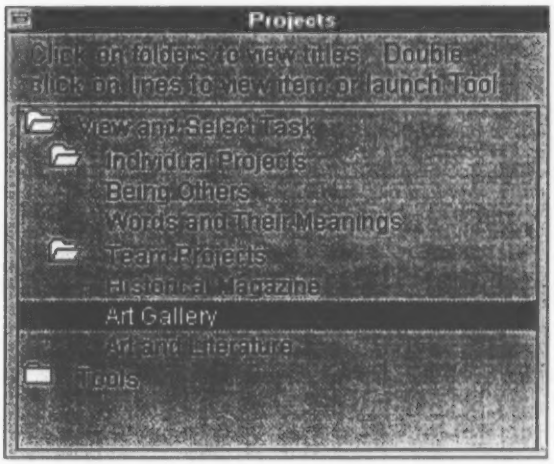

Figure 4. Project Palette. Students use the Project Palette to browse and select a project to work on while exploring the application.

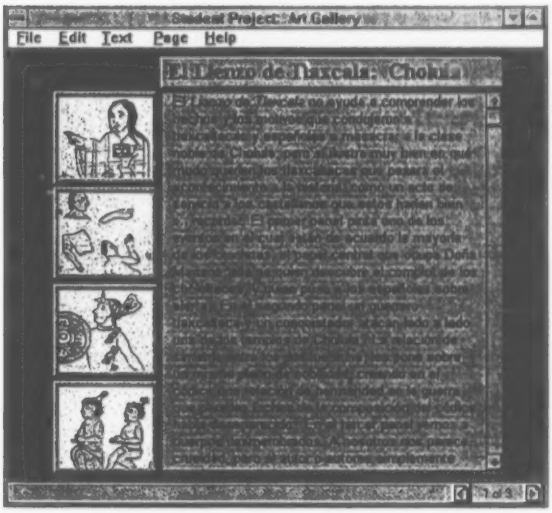

Figure 5. Project Sample: Art Gallery, page 1. Students use this Template to input and analyze art work collected while exploring the application.

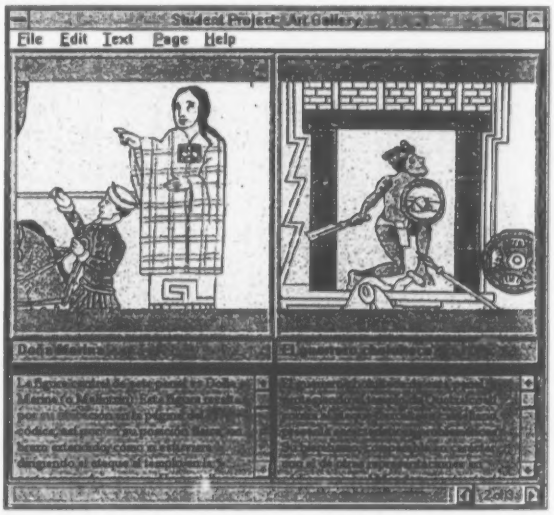

Figure 6. Project Sample: Art Gallery, page 2. This page contains samples of art work collected by the student and text with the student's analysis of it.

THE CREATIVE MODE

Existing EM applications cover approximately fifteen percent of the available video narrative. The remainder of the narrative is purposely left to be developed by the students, using the Creative Mode (CM) set of tools and templates. These allow students to easily create their own EM applications, adding their own Hot Text, Topics, and Projects, which are then used by other students. Students can also use these same tools to expand previously developed EM applications by adding new Topics. Each Topic chapter is linked to the EM application for the purpose of 1) clarifying or contesting points made by previous developers, or 2) simply adding data that the student thinks is important for a better understanding of the subject of the EM application.

To make it as easy as possible for students to create their own EM applications, they are provided with the following: a Main Application Template, a Hot Text Palette, an Add Topic Palette, a Media Browser, a Media Notebook, a Database (for Reference, Bibliography, and Media) Updater, as well as hard copy manuals. The Main Application Template is a shell including all the data containers and routines of a fully developed Exploratory Mode application, except that these are empty or undetermined, since the student will be deciding the content throughout. The shell has the following subsections: Introductory Pages, Main Video Narrative, Hot Text, Topic

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Chapter Shells, and Project Selections. To input the information into each of these sections, the student uses the Hot Text Palette (see Figure 7). To select the media that they will input, they can use the Media Browser (see Figure 8), and to keep track of the media available and the media they have incorporated, they use the Database Updater (see Figure 9).

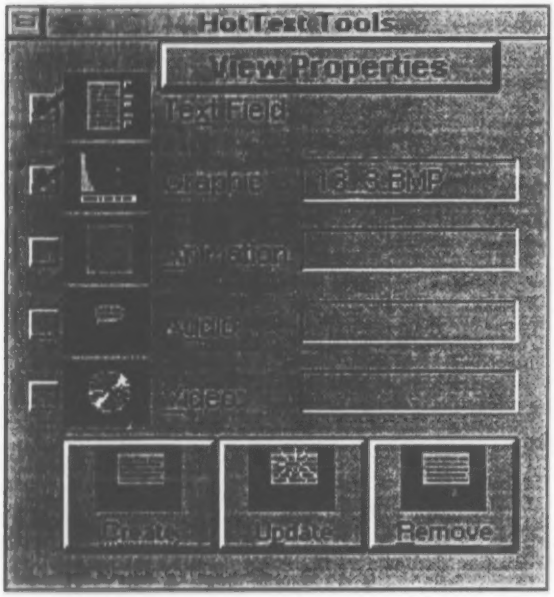

Figure 7. Hot Text Palette. After selecting the text that the student wants to make active, s/he uses this palette to select the media activated through the text.

Figure 8. Media Palette. Makes it possible for the student to browse through all the available media in order to make a selection for hot text input. The student may also have this information recorded in his Media Notebook.

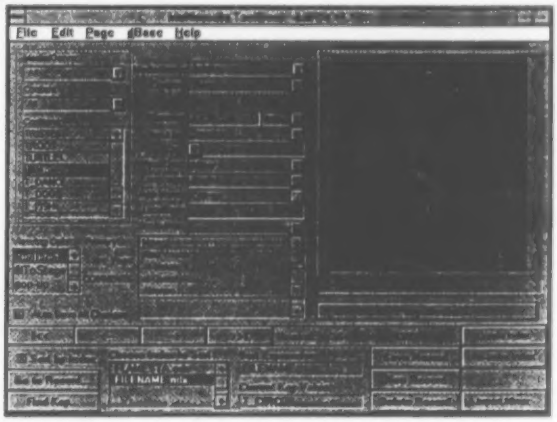

Figure 9. Database Updater. A simple front end to database files containing the media collection available to the student. It also provides tools which the student uses to update the collection so that it reflects her contributions.

CLASSROOM IMPLEMENTATION AND INTEGRATION

Integrating the EM Applications into the Curriculum

The topic of the projected course at the University of Michigan is Latin American History and Culture from the fourteenth century to the present time, focusing specifically on the following periods: Pre- and Post-Conquest Mexico, the Colonial Baroque, the Wars of Independence, the rise of democracy and dictatorships, the Mexican Revolution, and the Hispanic presence in the U.S. This course will integrate lectured and classroom discussions, as well as multimedia exploration and development. The EM applications will be integrated with other course materials, including textbooks, a course pack of selected journal articles, and collection of video materials.

EM applications will be used throughout the course. After covering a topic in the classroom through readings, lecture, and discussions, students will view the main video narrative chapter of the corresponding EM application. They will browse through the available Projects, and make a selection pending the teacher's approval. After exploring the Text sections and the relevant Topic chapters (all the while collecting information from these and the Databases in

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their Media Notebooks), students create a first draft of their final Project. The teacher reviews the results and makes recommendations for additional research. Students can then use outside resources to incorporate additional information into their final Projects. The final projects will be presented and discussed in the classroom, reviewed by student peers, integrated into the **Espejo Enterrado** software collection, and added to the students' electronic portfolios. Students will be graded solely on the basis of class participation and their multimedia portfolios.

Integrating CM Applications

During the course of the semester, students will work in groups using the CM to create their own EM application. This EM application will be a significant part of their portfolios as well as of their graded work. The process of creating an EM application will begin with group proposals. These proposals will be submitted during the third week of the semester, after the students have become familiar with the structure and objectives of the EM applications. After the proposal is approved, the instructor will review the development of the EM applications at each of the following stages: Hot Text input, Project selection, Topic creation, update of Media, Reference and Bibliographical Databases. Each student will be responsible for different aspects of the research and development, synthesizing information from course materials and discussions, as well as gathering materials and digitizing media from other external resources. The group will also meet regularly to integrate their efforts. The first draft of the application will be reviewed by student peers and the instructor. After final revisions have been made, the applications will be incorporated into the **Espejo Enterrado** software collection.

ACKNOWLEDGMENTS

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PRESENTERS' BIODATA

Stacie Hibino is a doctoral candidate in Computer Science at the University of Michigan. She has a joint Master's degree in Education and Computer Science from UM. For the past four years, she has provided design and technical support to Project FLAME (Foreign Language Applications in the Multimedia Environment).

Gonzalo Silverio is a doctoral candidate in Romance Languages at the University of Michigan. For the past four years, he has served as the primary Spanish developer for Project FLAME.

Both authors are co-recipients of the 1993 EDUCOM Curriculum Innovation Award in the Humanities with Edna A. Coffin for the **Mexico Vivo Teacher's and Learner's Partner** applications.

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Electronic Corpora and Language Learning

Glyn Holmes, University of Western Ontario – Canada

ABSTRACT

Many language courses are still based on deductive and prescriptive methodologies — an approach which, it has been argued, is not the most effective way for students to acquire those language skills. Electronic texts and software to manipulate those corpora allow for a perhaps more fruitful, inductive approach. With such electronic tools, students can become researchers and, on the basis of actual examples of language use that they are prompted to discover, can formulate their own descriptive hypotheses and rules about linguistic phenomena such as grammar, syntax, semantics, morphology, orthography, and punctuation.

For example, learners of English often have difficulties with prepositions. Students can scan a corpus, retrieve all occurrences of the word "in" and formulate (or test) rules about the semantics of the term ("Does it always mean 'inside?'"), about its position in the sentence ("Does it ever end a sentence?") and about its syntagmatic relationships to other elements of the sentence ("What kind of words follow it?"). A similar explanation can be done of the multifaceted French preposition *de*. Other examples will relate to verb forms, affixes, relative pronouns; to orthographical difficulties including homonyms, homographs, doubling of consonants, use of contracted forms ("let's," "isn't," in English; *au/aux/du/des*, etc. in French); and to questions of punctuation. In reality, the possibilities are myriad.

The electronic tools used to provide material for this presentation will be **TACT**, a text analysis system developed at the University of Toronto, and electronic corpora including children's stories, current English and French language newspaper articles, as well as a number of French literary texts.

PRESENTER'S BIODATA

Glyn Holmes has worked in courseware production for several years and is Editor of *Computers and the Humanities*.

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INTERACTIVE MULTIMEDIA FOR INDONESIAN: STARTING FROM SCRATCH WITH A MINORITY LANGUAGE

DEBRA HOVEN, GRIFFITH UNIVERSITY – AUSTRALIA

ABSTRACT

This presentation describes a national interactive laserdisc project being implemented in Australia to provide multimedia teaching resources for Indonesian language, a new "priority language." The materials are being developed on the PC platform using **Windows** and Multimedia **ToolBook**. With several recent national reports recommending the teaching of foreign languages, particularly Asian languages from the third year of elementary school to the end of junior high, the provision of resources to teach these languages to potential teachers has become a major focus for government expenditure. In order to have available sufficient teachers proficient in these languages, it is necessary for tertiary institutions to offer appropriate advanced level programs to help teachers of these languages gain the requisite level of proficiency. The provision of authentic, pedagogically sound language learning material resources to these tertiary programs therefore becomes a high priority need.

Indonesian, though still regarded as a minority language, is one of four priority Asian languages taught in Queensland. Student enrollments are growing as a result of the demand from business and the primary and secondary language teaching sectors. However, resources for the teaching of Indonesian, particularly technology based resources are minimal, difficult if not impossible to acquire, and usually inappropriate in content for the learning of Indonesian at tertiary level in Australia. Such resources and materials must therefore be developed locally.

Specific objectives of the project are to:

- select a range of appropriate authentic Indonesian language material and press this onto laserdisc;
- design and produce interactive self access learning materials which are pedagogically sound, learner-centered, and consistent with communicative language teaching methods to accompany the Indonesian laserdiscs;
- collect data on students interaction with the materials by incorporating a record keeping feature in the program, to provide information on the effectiveness and usefulness for students of the materials;
- develop "best practice" templates using the materials developed for the Indonesian laserdiscs for the development of similar materials for other languages taught.

The selection of suitable materials and the instructional design will be the focus of this presentation. Samples of the materials and templates developed will also be demonstrated.

PRESENTER'S BIODATA

Debra Hoven teaches Indonesian at undergraduate level, and CALL and applied linguistics at postgraduate level in the Faculty of Asian and International Studies at Griffith University, Australia. She has taught German, Japanese, Indonesian, and ESL at all levels from kindergarten to tertiary in Australia, Thailand, and Indonesia. Her research interests include computer enhanced listing, and practical applications of multimedia technology, land learning strategies, particularly their incorporation into multimedia based teaching programs. In the project described she is the Project Leader and the Principal Designer of the software, including instructional design, methodology, and collection of material.

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INTEGRATING CALL INTO A LISTENING COMPREHENSION COURSE

PHILIP HUBBARD, STANFORD UNIVERSITY

INTRODUCTION

Four years ago, I gave a talk at the CALICO Symposium on the role of CALL in listening comprehension. At that time, I described students' positive responses to five **HyperCard** stacks I had developed to supplement the audio and video tapes of an ESL listening class. In this paper, I will give an update of that project.

For the past eight years, I have taught one or more sections of a course called Aural Comprehension in the fall for newly arrived international graduate students at Stanford. The students in the course are there primarily because of scoring too low on our screening test. Traditionally, the course has been taught using audio and video tape material from academic lectures and other relevant sources for three class hours per week plus some independent lab work. What I describe here is a very different course, one in which computers have taken a central role.

LISTENING ON COMPUTERS

Ever since the ascendancy of Krashen's (1982) theory of second language acquisition, the importance of comprehensible input in the language classroom has been widely accepted. To Krashen, processing sentences for meaning is the engine which drives the language acquisition device. Other researchers and methodologists have challenged

Krashen's view, seeing significant roles for focused practice, formal grammar, and activities that generate comprehensible output. Yet, many continue to acknowledge a special role for comprehensible input. Long (1990), for instance, a critic of much of the rest of Krashen's theory, considers the necessity of comprehensible input for language acquisition to be one of only a handful of consistently supported research findings.

Turning next to listening methodology, in ESL, unlike in many foreign language settings, it is common to see listening isolated as a skill. ESL methods courses often cover listening as a separate area, and there are dozens of published listening textbooks at various levels, reflecting the fact that listening is regularly taught as a separate course. The dominant theme in most of these texts, particularly the more advanced ones, is that effective listening comprehension in a second language is very similar to effective comprehension in the first language. Following, sometimes rather blindly, the schema-theory model from reading, listening methodologists have focused on teaching skills and strategies that work primarily at the discourse level. There are pre-listening exercises aimed at activating schemata, for instance, by doing a reading or having a brief discussion about the topic of a lecture. Other exercises focus on lexical tracking strategies for picking out transitions and other rhetorical signals. Research has shown that native speakers use such strategies and that many non-natives don't, focusing their attention too much on word and sentence level processing and never putting the pieces together into a coherent whole. While current models stress interactive processing involving both top down and bottom up systems (Peterson 1991), advanced listening texts put much more emphasis on the top-down strategies.

If we go outside of language teaching to psycholinguistics, we see two other interesting generalizations. First, Richards (1983), citing Clark and Clark (1977), notes that when native speakers process sentences, they immediately discard the formal parts (such as the specific grammatical structure) and store only the propositional content. Second, there is increasing evidence that linguistic processing is modular (Flores d'Arcais 1988), and that the processes, rather than being fully interactive, feed in parallel into a central executive component. Of particular interest is evidence from a number of studies cited in Frazier (1988) that native speakers

syntactically process sentences even when the context is so strong as to render that processing unnecessary.

These four elements — the importance of comprehensible input, schema theory, the retention of propositional content over form, and the apparent independence of syntactic (and possibly phonological) processing — have significant implications for the teaching of an advanced listening class.

Looking first at listening and language acquisition, it seems reasonable to assume that intermediate to advanced adult learners are likely to use by default the processing strategy described in Richards (1983), where propositional content is retained and form is deleted. (This may, in fact, be what happens at the processing level in learners whose language has fossilized.) If this is the case, then it is not clear how they can acquire a form they immediately discard. Furthermore, the absence of wait time and additional cognitive demands make it likely that in processing longer stretches of connected discourse (as in academic lectures) non-native speakers rely on a lexical processing strategy, focusing on content words and building even advanced learners could profit from activities that promote a focus on sentence-level processing of both form and meaning, especially if some form of natural repetition or rehearsal is a part of the task.

If we look just at second language listening comprehension, without being concerned about whether new structures are being acquired, we can make similar arguments. There is no question that advanced learners need training in making use of both formal and content schemata to understand and retain information from spoken discourse. In fact, in listening to connected discourse (e.g., an academic lecture), a focus on form at the expense of constructing associative links leads to incomplete understanding and difficulty in retention.

That is, a bottom up approach alone is ineffective. However, schema-based approaches, due to their focus on more global aspects of meaning (or top-down processing) limit attention to grammatical information needed for effective sentence-level processing. It is likely that listening for meaning in environments where there is no time for full processing, or where the task does not demand it, promotes a lexical processing strategy. Thus learners need activities which promote syntactic and phonological processing so as to build up automaticity in those areas. With more native like automaticity, form (particularly grammatical form) can be processed in connected discourse without becoming the focus of attention.

THE COMPUTER MATERIALS

Five years ago I discovered my Macintosh could talk and that I could use **HyperCard** to create listening comprehension exercises on it. During the fall of 1990 I started working on two types of exercises to provide focused practice in phrase and sentence processing: picture identification and numbers (described below). In the preliminary project, students responded favorably, so during the next few years I produced additional exercises of these types and added several new exercise types and enlisted the help of colleagues Chris Gordon, Connie Rylance, and Karen Tenney to help write the materials, and thanks to their efforts, we now have 42 disks of listening exercises. Each disk provides enough material for a typical student to spend 20-40 minutes using the computer. Most of this material is already available on-line through the language lab file server at Stanford. The speech in the exercises was recorded intially using a MacRecorder and later a PowerBook's internal digitizer at an 11K sampling rate. The speech is deliberately rapid with reduced forms, providing the linguistic elements of authentic speech.

Below is a brief description of the exercise types developed to date:

Picture Matching (MatchBox)

In these exercises (16 in all), students are shown three boxes that differ in one or more ways. They hear a short (1-3 sentence) statement referring to of one of the boxes, and click on what they think is the right answer. The items are set up so that the students are led to process the sentence for meaning, relate it to the immediate pictorial context, and in some cases link it with real world knowledge. After the item has been answered correctly, a button appears allowing the option of seeing the text version. The assumption here is that such intensive practice will increase both the ability to discriminate English sounds and the speed and ease with which spoken language can be processed. Students using this often repeat the item two or three times before attempting the answer, increasing the chances of a focus on form.

Numbers

The nine numbers exercises all follow the theme of numbers but vary significantly in their form and focus. In one type of exercise, students hear a number of items (e.g., 14,023 people) and have to type in the correct number; a similar exercise deals with ordinals (e.g., the 370th row). Several exercises work with sequences of digits, including decimals (e.g., .004678 millimeters), zip codes (e.g., Kansas City, Missouri 64113) and phone numbers (e.g., the number is 508-0246). A third type involves transforming dates into numerical form (e.g., a student hears September 30, 1990 and has to type in 9/30/90). Another exercise requires adding sequences of coins and typing in the answer (e.g., 3 quarters, 8 dimes, a nickel, and 7 pennies (= $1.67). The last type of numbers exercise is word problems, integrating the numbers with sentence processing (e.g., If you add 15 to the number of days in the year 1999, what would you get? [380]).

Spelling

The three spelling exercises all have the same format, with the focus not on spelling per se but on the processing of the names of English letters. The objective is to increase students' skill at discriminating automatically between similar-sounding letters (like b and v) and at responding appropriately to the English vowel system (hearing phonetic [i] and typing e rather than i). Students hear a word spelled out, type in what they think they hear, and if they are right, see a definition of the word and an example sentence, along with a button allowing them to hear the word pronounced.

Micro Reports

The 13 exercises in this group each consist of a one-minute, information-dense report on a topic (e.g., the Bahamas) that students are supposed to listen to and take notes on. This is followed by a series of 10-12 multiple choice comprehension questions. If the students get a question wrong, they are taken back to the segment that has the information needed to determine the answer, providing the equivalent of a listening scanning task. The questions are followed by a sentence dictation exercise.

Following Directions

This exercise, titled Fogg City Adventure, has the students nominally role playing a visitor in a city. They are given directions to various destinations and have to find where they are supposed to go on a map. Once again, the focus is on sentence level processing, though the accompanying storyline also gives students an opportunity to practice reading.

RESULTS AND DISCUSSION

In the most recent trial run of these materials, in fall of 1994, three sections totaling around 55 students worked with them. In two of the sections, which I taught, students had two hours of class and 60-90 minutes of required computer work per week. In the third section, students had three hours of class and the computer work was less intense, averaging 30-60 minutes per week. Throughout the course, students filled out sheets stating how long they had spent on the assigned material, how easy and how useful they thought it was, and any bugs they noticed. I will limit my report to the two classes I taught since the responses from the other class were less complete.

Table 1 shows the responses to two questions across three types of activities at the beginning and end of the course in fall of 1994: "How easy was it for you?" (on a 5-point Likert scale from easy to hard) and "How useful do you think it was?" (on a 5-point Likert scale from not much to very). (Note that while the picture matching and report were similar in form and level of difficulty for weeks 2 and 10, the numbers activity in week 2 was numbers of things while in week 10 it was word problems.)

Week 2	Match	Numbers	Micro Report
How easy?	3.5 (39)*	2.6 (39)	3.4 (38)
How useful?	4.2 (38)	4.0 (38)	4.2 (38)
Week 10	**Match**	**Numbers**	**Micro Report ****
How easy?	2.8 (34)	3.6 (33)	3.2 (39)
How useful?	3.8 (34)	3.9 (33)	3.9 (39)

* number of respondents is in parentheses
** Micro Report data is from week 9

Table 1. Mean student evaluations of difficulty and usefulness of exercises on a five-point scale

As can be seen, student perceptions of the usefulness of these activities, while dropping some, remained high.

At the end of the quarter, in addition to the mandated university evaluations, students were asked to fill out a separate form on the class. Among the questions asked, two are of particular interest in judging student perceptions of the value of these programs. The questions and response patterns are given in Table 2.

What do you think helped your listening improve the most?	
Classwork	6
Computer homework	11
Both about the same	18
How would you recommend the class be set up next year?	
More computer time	18
More class time	8
Same as this year	10

Table 2. Distribution of student responses to final evaluation questions

As can be seen, students acknowledged the value of the computer activities. Of even greater interest is the fact that at the end of the course fully half of them recommended additional materials of this type for next year's class.

Obviously, it would have been more convincing to have conducted a controlled study of the efficacy of these materials, but that was outside the scope of the project. As a classroom teacher, I want to use methods and materials that meet two basic criteria: 1) they are consistent with my language teaching approach as informed by theory, research, and experience and 2) they fit my students' needs as perceived by both me and them. The materials described here and the course they were integrated into appear to have met those criteria.

I expect to see a lot more in listening in the next few years. CD-ROM or something like it will make video-based courses available to the masses in ways interactive videodisc never has. It is my hope that the lure of mass storage will not lead courseware designers to forget the importance of sentence level activities. As Peterson (1991) points out, listening is neither top down nor bottom up: it is interactive and requires skills and training in how to use both processing strategies effectively. What I have tried to show here is that some of the bottom up work can be handled effectively by computer.

In concluding, I would like to bring up two points about this project which bear on issues in the field. The first is the notion that you need grants or corporate backing to develop useful software. You don't. My colleagues and I received no release time, and did all of the programming, materials development and even artwork ourselves. While it obviously took some time, it was also fun. The only trick is in finding the right mix of people. The second is the notion that the computer will never replace the teacher. It already has. By freeing up a third of class time, it has become possible for me to teach an additional course without adding to my total class hours. Specifically, we have been able to add a winter quarter listening course to accommodate those students who want or need more than the ten weeks that had previously been the limit we could offer them.

This winter we ran an experimental section of this class with four students based on a model having them in class for an hour and a half once a week and working about three hours a week outside of class on some of the materials described above, an advanced CD-ROM-based course and videos of academic lectures and feature films. We will integrate this new course into the regular curriculum next year.

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PRESENTER'S BIODATA

Philip Hubbard is Senior Lecturer in Linguistics and Associate Director of the English for Foreign Students Program at Stanford University. He is the author of a number of papers on software development and evaluation. He is also the co-author of the **HyperCard** listening program **HyperACE** and the two CD-ROM series *Active English* and *Accelerated English*.

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VIRTUAL EFFECTIVENESS: COMPUTERIZED VS. TRADITIONAL COMPOSITION

JOAN JAMIESON, JENNIFER REY, AND SARAH RILLING, NORTHERN ARIZONA UNIVERSITY

ABSTRACT

In our first year of computerizing our university's composition course, we examined differences in processes, products, and attitudes between two methodologies. This presentation will begin with a brief explanation of the course and adaptations made to implement it on a networked Macintosh platform, utilizing asynchronic discussion groups and peer editing. We will report on quantity and quality of discussion, student and teacher attitudes, quality of writing, and attrition rates for both control and experimental groups. Future directions will include our ideas for developing and adapting software, and creating new routines to better assess the effects of process on product.

PRESENTERS' BIODATA

Joan Jamieson is an Associate Professor in the applied linguistics group at Northern Arizona University.

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THE ORAL LANGUAGE ARCHIVE: DESIGN AND IMPLEMENTATION

CHRISTOPHER M. JONES AND MATHEW M. MCNALLY, CARNEGIE MELLON UNIVERSITY

ABSTRACT

The Oral Language Archive is a centralized database of digitized sound accessible from distributed personal computers for the study of foreign languages. In addition to the sounds themselves, OLA is comprised of the tools to manage and distribute those sounds. This combination of information, and the tools to interactively access that information, make OLA unique in its attempt to provide a universal structure to describe, categorize, and listen to all major languages via a single access system. That is, the OLA user will be able to listen to hours of Japanese, French, and Russian dialogues of varying complexity from their personal computer, whether a PC or Macintosh, using a single application without swapping CD-ROMs, access tools, or authoring environments.

The intention of the OLA is to make oral language, with an emphasis on authentic dialogues, available directly to any network based computer desktop, moving toward national access through the Internet. A software "browser" will allow instructors and researchers to search the Archive and to either listen directly to the language discovered or establish links from other software authoring environments for insertion into interactive language learning materials. Most students will hear OLA sounds in pedagogically defined software contexts without knowing that the sounds are being remotely retrieved across a network. This allows the OLA to enrich all basic language instruction, including self paced, maintenance, and intensive language study.

PRESENTERS' BIODATA

Christopher M. Jones, in his capacity as Director of the Resource Center at Carnegie Mellon, works at the intersection of technology and the teaching of language and culture. This currently is reflected in an emphasis on multimedia development, specifically the use of the Macintosh to process sound, development, text, imagery, and moving images in an integrated environment, including (or not) the use of CD-ROM or laserdisc based information. Projects at CMU include the NEH funded digital Oral Language Archive (OLA), a server based collection of text only grammar exercises using the **Dasher** authoring system, and computerized glossaries. He is also involved in a multiple year contract with Holt, Rinehart to produce elementary and intermediate multimedia based texts for university level French.

Mathew M. McNally, a graduate of Carnegie Mellon University, returned as the Director of Computing for the College of Humanities and Social Sciences after establishing a national consulting firm's Macintosh technology group. With experience in networking, information theory, systems architecture and multimedia production, Mr. McNally's research focus has been in computer based and distributed courseware materials. Recently he completed construction of an enhanced media classroom and co-designed the College's Language Learning Resource Center. In addition to these activities, he provides curriculum development support for the College and teaches an interdisciplinary user interface design course.

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COMPUTERIZED DIAGNOSTIC TESTING AS A PRELUDE TO CALL

RANDALL JONES, BRIGHAM YOUNG UNIVERSITY

ABSTRACT

Brigham Young University has a comprehensive German CALL program know as **CLIPS** (Computerized Language Instruction and Practice Software) for practicing and reviewing grammar and vocabulary. The program was originally intended for use in the first two semesters or the German program, but it has proven to be useful as well for intermediate and advanced students who need remediation in specific areas of grammar. In order for students to use the program effectively, it is important for them to have an understanding of their main areas of weakness. Unfortunately, many students do not have a clear perception of their proficiency in using grammatical structures.

We are now in the process of designing a computer administered diagnostic testing program to assist students in understanding which areas of German grammar they need to review. By "probing" certain grammatical concepts through the use of sample items, we hope to be able to assist students in using **CLIPS** more effectively, by guiding them to the lessons that will be most useful to them. The program will be especially valuable to students in the first weeks of intermediate and advanced courses.

PRESENTER'S BIODATA

Randall Jones is a Professor of German and Dean of the College of Humanities at Brigham Young University. He earned his Ph.D. in Linguistics at Princeton University and was a member of the Faculty of Modern Languages and Linguistics at Cornell University before going to BYU in 1978. He has been involved with a number of projects that relate to technology and language learning, including the German TICCIT program, DiscoDeutsch, G-CAPE, and the BYU Corpus of Spoken German. He has also served as editor for several electronic publications including the electronic edition of the works of Goethe. He has served as chair of the MLA Subcommittee on Technology and currently serves as the co-chair of the AATG Committee on Technology.

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MULTIMEDIA — A MAKEOVER

ANITA KNISBACHER AND JEFFREY KNISBACHER, DEPARTMENT OF DEFENSE

ABSTRACT

Back in the 1980s, the United States Government put together a team to showcase the potential of interactive video technology in foreign language instruction. The effort lasted several years and the product is as popular among learners today as it was back then. But as technology has continued to evolve, the older and sometimes proprietary hardware has begun to show its wrinkles. This paper will describe the restoration process and its results.

INTRODUCTION

In 1992 the United States Government contracted with Loral Western Development Labs to rework two foreign language interactive video (IAV) programs, in Spanish and Hebrew. This paper will concentrate on the Hebrew effort. The hardware in the original program consisted of a Zenith 248 AT, a Pioneer 2000 videodisc player, and a proprietary random access audio device known as Instavox.

The authoring tools were Courseware Design System (CDS) and Courseware Design Language (CDL), used for fine tuning. Track two of the videodisc was used for the MCEA (More Carefully Enunciated Audio); the Instavox 14" "floppy" contained idiomatic expressions, culture notes, and an advanced level total comprehension listening test.

The audio quality of the Instavox left a lot to be desired and its specialized cable made widespread dissemination of the courseware impossible. However, at the time, this was the only random access audio device that could fulfill our IAV/CAI development needs.

The new system consists of a 486 multimedia PC platform containing a 19" multisync monitor, 660MB hard drive, CD-ROM drive, SVGA card, video overlay card, digital audio card, videodisc player, audio mixer, amplifier, speakers, and mouse. A motherboard with a clock doubling chip was added later to accelerate system response. In addition, a 90MB Bernoulli drive to facilitate data transfers between networks and an HP LaserJet IIIsi printer are provided for each of the two network locations.

The software falls into two categories: vendor supplied and Loral developed. The actual coding was done in **Authorware Professional** for **Windows** 1.0, with a later upgrade to the 2.0 version. The Hadar Hebrew font selected for the conversion process did not project very well in certain point sizes until Loral modified it through the use of **Fontographer**, an applications tool. Loral also developed other applications, such as a record keeping tool, which follows the learner's path through the various complex layers of courseware, monitoring and keeping track of progress. More about this later.

THE LEARNING THEORY

Very early in the analysis phase of the original program, the Subject Matter Expert (SME) designer came upon a macrolevel strategy and structure for the development of instructional design by Reigeluth (1979, 1980, 1982, 1983) called Elaboration Theory.

Consider Gagne's conditions of learning. Gagne (1984) advocates that instruction be based on prerequisite knowledge, and, as a result, concepts must be taught first, then rules and principles, followed by problem solving at the application level. Elaboration theory, by contrast, starts with the overall picture (without much detail), elaborating from there as needed. One may start with a very simple elaboration, epitomizing (presenting the essential features), then summarizing and synthesizing before going one level deeper, to the next elaboration.

The strength of elaboration theory is precisely in this macrolevel approach. In most conventional courseware the learner is exposed to only a part of the overall structure at any given time. In elaboration theory the smaller parts are always related to the larger view, which procedure seems to increase the ability to learn concepts, promoting better transfer of information and enhancing long term retention.

Reigeluth's elaboration theory also holds that "memory is a network of ideas interrelated horizontally and vertically to the whole."

THE COURSE

The product itself, an intermediate colloquial Hebrew language course, is based on a laserdisc containing two 30 minute situation comedies from the Israeli TV series Close Relatives. Side A, "The Maid," contains approximately 160 hours of instruction revolving around the controversial issue of hiring an Israeli Arab student to help with housework.

Typically, the constraints of normal platform instruction make it very difficult to address different learning styles and degrees of readiness. However, the elaboration theory approach lends itself very well to the needs of a wide population of learners.

After a thorough content analysis based on the fundamentals of elaboration theory (Jonassen, 1989), the overall structure was arranged in a top-down fashion. Principles, concepts, and a few procedures were identified and sequenced accordingly.

There are three distinct entry levels in the course: film, scene, and clip levels, each capable of interrelating with the other or standing on its own. Film level covers the entire 30 minutes of video, together with related learning materials and overall testing. The film level material was divided into seven contextually meaningful portions (scenes) which constitute one layer of elaboration. Each scene is composed of about four minutes of video with related learning aids and appropriate tests. Finally, each scene was divided further into as many contextual video bites (clips) as possible. A typical scene might contain as many as five clips or as few as two. These range from between thirty seconds to two minutes of video and are packed with valuable information, practice, and remediation — putting the learner in complete control of path and pace. There are no tests at this level.

Even though a few, strong learners may wish to enter the course at film level and proceed very rapidly through it, most students will opt to view the entire video at Film level first, and then proceed down to the scene/clip levels, returning to the film level once again at the end, to take the final examination.

This three-level division, with the top layer at each level synthesizing the elaborations connected to it, is reminiscent of Reigeluth's "zoom lens in a camera" approach; i.e., we always begin with the wide angle view and zoom in very gradually, summarizing and synthesizing as we move along. Within each of the above levels, prerequisites precede more complex structures, becoming the foundation for new learning and the glue for cumulative learning. The student is given ample opportunity for practice at each level. These elaborations become denser at the lowest level of instruction in order to build a strong foundation for the weaker learner. Throughout, the learner is able to control the mode and pace of instruction. At scene and film levels, there are test item banks, that allow the computer to scramble the items before each new attempt. All practice materials are geared to the tests. The learner is allowed only one try per each test item, with instant remediation provided for every wrong reply. And last but not least, while the clip level materials are geared to the slow or average learner, to challenge the stronger student, there is an optional advanced level total comprehension graded aural exercise in rapid-fire Hebrew. It is presented in dialog format between two speakers and raises the course level to 3+.

"Mediated" learner control is the overall philosophy. The learner has full control over the sequence of learning, however, CMI (Computer Managed Instruction) steps in to guide and alert him/her (via a diagnostic examination) as to what segments or lessons need additional reviewing prior to taking the final test. This built in "advisor," based on data collected by the record keeping tool, sets the learner on the proper learning path, making the learning process more focused and efficient.

With every item of the video sound track analyzable down to the individual utterance, with culture and idiom notes, with tutorials on almost every aspect of the grammar, and with exercises to reinforce every point related to content, the program provides challenge and remediation for every type of learner, while preparing all to pass the comprehensive film level final examination.

CONVERSION PRELIMINARIES AND COURSE STRATEGY

Since the design of the original course material is still valid, the conversion effort dealt primarily with hardware and screen design issues. The original

Government SME teamed up with the contractor to make sure that the change of face did not inadvertently modify the course design, and to assist with target language issues, such as quality assurance.

A series of meetings between the Government and Loral representatives preceded the actual conversion process. By September of 1992 the parties came to the following terms regarding the implementation strategy (1992). There would be a "maintainable interface" between the system (**DOS/Windows**) and the language enrichment materials; i.e., the government would be able, on its own, to later add to or modify the final product.

- The original instructional materials would be preserved; in the new hardware setup the major apparent change would be the replacement of the Instavox proprietary 14" random access audio device with a **Windows** standard audio card.
- The original screen design would be modified and updated to give the product a complete facelift.
- The text and graphics would be similar to the original presentation, but updated to their new environment.
- Screen prints from the original course would be used to transfer the content to its new environment and for documentation purposes.
- Student registration into the courseware would be via floppy disk, making it possible for the system to associate the user with data on his/her use of the enrichment materials.
- Student paths through the course and test item data analysis and evaluation would be developed as a separate module, to facilitate its use on any **Windows** based machine.
- Record keeping data would be written to floppy diskette. Only the enrichment materials would reside on the hard drive.
- During the development phase, audio and video reference numbers, authoring models, and screen printouts would ensure consistency of the final product.

  That final product would also include a student guide and course administrator's handbook. The former would deal with all information necessary for accessing the course, and the latter, with course registration and record keeping.
- Movement through the course would be via the keyboard and mouse.

THE CONVERSION PROCESS

The actual development phase of the conversion began when Loral started identifying audio and video frame numbers and putting together predetermined Models (pre-programmed templates) representative of the various portions of the courseware. While the coder concentrated on coding issues, the graphic designers worked closely with the original course designer/SME to modify the outward appearance of the course; i.e., the presentation screens.

The Government SME was on hand for consultation at all times, transcribing the cultural and idiom notes from Instavox, rerecording the transcribed notes, and going over data files in order to eliminate typing errors before the materials were coded.

The SME review of the final product began shortly after the course started going on line. A standardized mechanism known as Technical Problem Reports (TPRs) was developed for the SME to communicate problems and their required fixes. As with any software review process, there were, ultimately, hundreds of corrections to be made. In general, the policy was that functional inconsistencies had to be dealt with right away; textual content and typographic errors would be left until coding was complete.

A weekly technical issues meeting was held between the Government SME and Loral's coder, minutes of which were presented at the general weekly meeting for TPR review and correction prioritization.

THE CONVERTED COURSE

The user interface allows learners full mobility among the various levels of instruction and from one activity to another no matter where they are. It is divided into four major areas:

- Level Selection area
- Capability Selection area
- Work area
- Video/Audio Control area (Appendix 2).

After the title screen (Appendix 1), learners encounter the videodisc selection screen. Once the disc side has been confirmed, they enter one of three levels of instruction: Film, Scene, or Clip (via Menu). These are displayed on the user interface screen in the Level Selection area. Course Reference and Help also reside

here and can be accessed at all times (Appendix 2). The Capability Selection area is next (Appendix 2). It is preceded by the Title box which holds the address of the selection, reminding learners where they are.

The Capability Selection area is equivalent to a menu, keeping the learners abreast of what selections are available. A muted icon is out of bounds for the duration of an activity. A selected icon is blue, indicating an activity which is in progress. By the same token, a blue bordered work area indicates an ongoing activity.

Next comes the Work Area. (Appendix 3). The open half of the screen has been divided into four quadrants. The bottom right has been allocated to video only. The other three quadrants alternate among the various selections (from the Capability Selection area). No two activities can share a common work (screen) space simultaneously. A dialog box will alert the user of the need to close an open window prior to selecting another activity. Sub menu selections appear in the box below the Capability Selection area as they become available.

Finally, there is a Video Control area, located across the bottom of the screen (Appendix 4). It contains a video locator bar whose color and appearance change, depending on the level the user is accessing. Its function, however, remains the same; i.e., to indicate what scene/clip is being viewed. The icons above the locator bar allow the learner the option of listening to an utterance over and over again, or playing a previous or next utterance at will. The Video/Audio Control area contains the Video, Slow Audio, Audio Only, Audio Notes, and Pause icons. The Audio Notes hold the entire content of the original Instavox — idiomatic expressions, culture notes, and the audio track for the aural Advanced Total Comprehension graded exercise.

The only icon we have not mentioned is Exit (Appendix 2). This icon is present no matter where in the course the user happens to be.

First time users are taken straight to the tutorial (Help, Appendix 2) prior to commencing instruction to familiarize them with all the intricacies of this complex design. The tutorial introduces the course through explanatory text, allowing the selection of various areas of the screen to learn more about them. After completing the tutorial, the learner can begin the course.

The Help (Appendix 2) icon allows the learner to review the tutorial or to display the Hebrew keyboard, leaving it on the screen as a reference for Cloze and transcription exercises. Menu (Appendix 2) takes the user to a graphic representation of the course. By selecting the various click/touch areas on the title bar, the learner can see a summary of a particular scene, preview the video, or make scene/clip level selections (Appendix 5). At film level the learner can access video, video with cultural and idiomatic expressions, word banks, a final examination, and the advanced level listening comprehension graded exercise.

Scene level provides all of the above plus various word reviews and a diagnostic and final (scene level) examination. At Clip level the learner can have video, keywords, idiom notes, culture notes, a transcript of the text, an accompanying English translation, transcript associated keywords, idioms, culture notes, specialized vocabulary notes and a three level grammar review and practice. Every clip also contains comprehension exercises.

Although each learning event or activity has a distinct window design, there are some common characteristics among the various windows. The title bar contains the title and topic of an activity from the Capability Selection area. It may also show the number of attempts per item, provide hints, directions, videodisc availability, plot, characters, English/Hebrew translations, grammar notes, exercises, and various word review games.

CONCLUSIONS

The coding and pilot testing were completed in November of 1993. The course will be ready for distribution and field testing as soon as final revisions are made.

The existing (old) version of the course has been in continuous use since 1988, and, even with the dated, clumsy interface, jerry rigged hardware and clunky processor, continues to be highly popular with our students. If the updated version is even half as successful, we can expect many more years of useful life. Makeovers, of course, cannot work miracles; there has to be underlying substance to work on, in this case, solid instructional design.*

* This courseware has just won the 1994 University of Nebraska Interactive Media Award for Best in the Government category.

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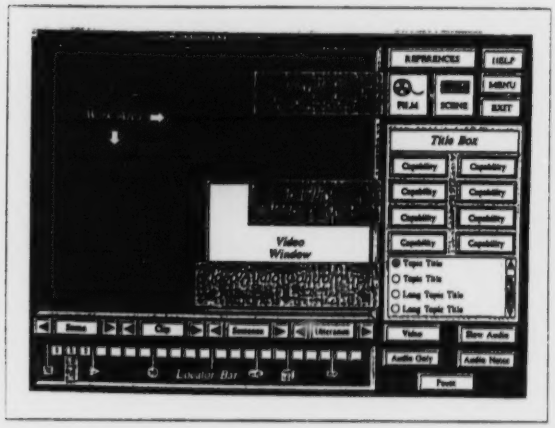
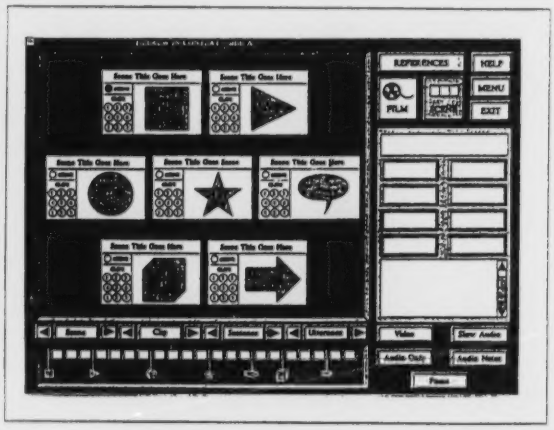
APPENDIX

Appendix 1.

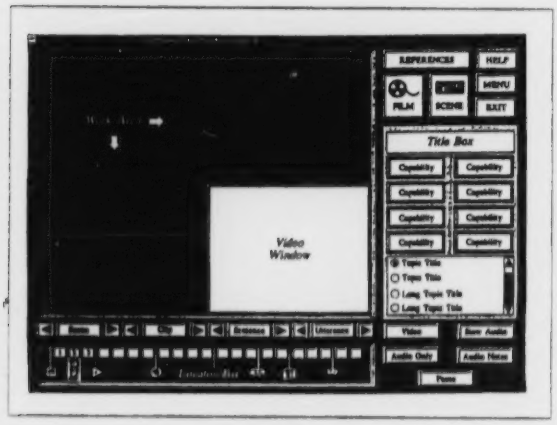
Appendix 4.



Appendix 2.



Appendix 5.



Appendix 3.

BEST COPY AVAILABLE

QTKANJI: LEARNING HOW TO DRAW KANJI WITH QUICKTIME

SAEKO KOMORI, CHUBU UNIVERSITY – JAPAN

INTRODUCTION

Previous studies of Japanese language teaching have shown that knowledge of kanji greatly affects overall Japanese proficiency (Ishida, 1989). In other words, kanji is one of the keys in Japanese study. In this paper a computer software program named **QTKanji** will be introduced as a kanji learning aid. One of the characteristics of **QTKanji** is to show the process of writing kanji on a computer screen. After the explanation of **QTKanji**, the pilot study among students will be introduced. An example of other usages of **QTKanji** and future research plans will also be discussed.

WHAT IS QTKANJI?

QTKanji is a **HyperCard**-based kanji learning program which allows students of the Japanese language to see how each kanji is written. Each kanji drawing has been digitized from video footage using **QuickTime**. Knowing the stroke information of kanji is necessary for a student to be able to look words up in the dictionary, figure out other people's handwriting even when it is not clear, and guess the meaning of unfamiliar kanji.[1] In designing **QTKanji**, the author had in mind individual instruction as well as a class or group instruction, since kanji learning depends on each student's need, study speed, interest, and background knowledge of kanji.[2] A student who has some kanji knowledge may need a different approach from a student who starts to learn kanji for the first time.

QTKanji has been created to help the kanji learning process by showing how it is written as many times as a student wants. In a traditional kanji teaching class, a new kanji is introduced by showing how it should be written once or twice as an example on the blackboard, and the students practice writing once or twice. Then they are asked to fill up a line with the kanji in their notebook as homework. When they practice the kanji at home, they can only look at the written results of the kanji in the notebook. Textbooks or dictionaries show how kanji should be written by either putting numbers or arrows, the use of which does not always clearly show the process of how a kanji is written. **QTKanji** has the advantage of showing the stroke information visually and allowing the students to study at their own pace. Students can follow easily by just looking at the screen and practice writing next to the model.[3] This practice mode allows the student not only to see how the kanji is written but also to actively write and compare it with the model.

BUTTONS AND FIELDS IN THE KANJI CARDS OF QTKANJI

Buttons and fields in the kanji cards are explained here. When students open **QTKanji**, they have two ways to find the kanji they need to work on. On the first card, there are two buttons for *mokuji* (the table of contents), and "list" (the index). The kanji in **QTKanji** are based on those in the *Basic Kanji Book*, Vol. 1 and 2. The *mokuji* button opens the table of kanji which are organized lesson by lesson as those in the *Basic Kanji Book*. Clicking the kanji in the table will bring the students to the kanji card. The "list" button will take them to the index. It lists all the kanji in the program. Clicking one of the target kanji also brings the students to the kanji card.[4]

As it is shown in Figure 1, each kanji card consists of a **QuickTime** movie window and three information fields. The three information fields are *on*, *kun*, and *jukugo* information. The *jukugo* are based on the *Basic Kanji Book*.[5] There is a button called *kakusuu-kuizu* (stroke-number-quiz), which can test the student's counting of the kanji stroke number.[6] The **QuickTime** movie starts by clicking the pen and paper icon on the lower left of each kanji card. The movie window has the basic **QuickTime** function such as start, stop, pause, backward, and forward.[7]

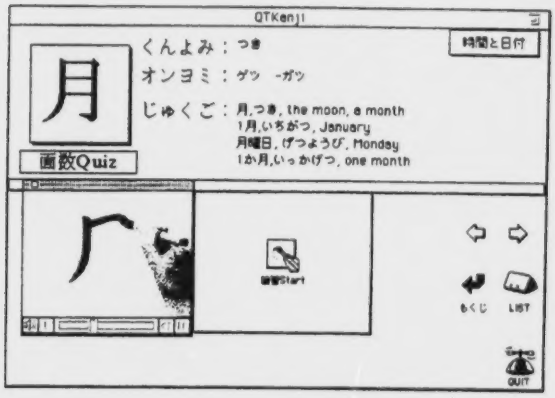


Figure 1.

A practice writing area has been added to the current version. It is opened by clicking the icon next to the movie area. By clicking the pointer, it changes to a brush icon and the students can practice writing by dragging the mouse. While the students write kanji in the work area, it is possible to see the movie as many times as necessary by clicking the start button of the movie. The message box, which gives the instruction to the students to choose the finger icon in the tool box, appears near the work area. When the writing practice is done, the student chooses the finger icon and goes on to the next kanji study.

QUESTIONNAIRE TO STUDENTS

In order to evaluate **QTKanji** for kanji learning, a pilot study was done at Chubu University in the fall of 1994. Nineteen students who were studying in an intensive program tested **QTKanji** and answered a questionnaire.[8] Those students studied kanji for half an hour in a class four times a week using the *Basic Kanji Book*, Volume 1. Every other class, they were introduced ten to fifteen new kanji in each lesson of the book. After the class work, the assigned group of students used **QTKanji** in a computer room to review the new kanji which they studied that day. Thirteen out of nineteen students have studied Japanese for about three semesters before the intensive program. The others studied longer, averaging 2.3 years. The number of times the students tested the program range from one to four. Almost half of them answered that studying kanji in their previous study was difficult, except for one student who has Korean language background. **QTKanji** received fairly positive feedback; in particular, that **QTKanji** was easy to use. Most of the respondents indicated that **QTKanji** was helpful in remembering kanji.[9] Even though this questionnaire was limited in number of students, the result shows that studying with **QTKanji** has a possibility to promote their kanji learning. The author felt strongly that several improvements must be made in order for the program to be used regularly by the students in a regular curriculum. Some of which have already been implemented in the current version.[10]

Here are some of the comments from students who tested **QTKanji**:

> It's easy to remember the stroke order because you can picture it in your mind afterwards.
>
> It was easy to use; helped with working out the stroke order.
>
> Helped me to follow the stroke order and the style of writing that is required.
>
> You could watch [the characters] being drawn/painted on the screen as many times as you needed, and by visually experiencing it, it helped you to picture it better in the mind.
>
> You have a better understanding on how to write the kanji.

No specific negative feedback in the questionnaire came from the students concerning the kanji study with **QTKanji**, but the author feels that some kind of testing mode where the students can test their knowledge about the kanji is necessary in any future revision of **QTKanji**.

An example of QTKanji use with other programs

The usage of **QTKanji** can vary depending on the students' need. As we saw in the students' questionnaire, it is possible to work with text books designed to study kanji. However, **QTKanji** can also be used effectively with other computer programs. One of the examples is the integration with a software program called **Kanji Hatsuon Dictionary**, which the author has been using in her reading and writing class. The **Kanji Hatsuon Dictionary** and **QTKanji** have been connected to help students' reading and writing study. The **Kanji Hatsuon Dictionary** is also a **HyperCard** based program created by the author in 1993. This program is used when the students do not know how to pronounce the kanji compound in the

context. This dictionary gives the kanji pronunciation with the recorded sound as well as in hiragana. It is important in Japanese to know how the word is written in hiragana, because most dictionaries are in hiragana order. Knowing the pronunciation, the students can look up the word using electronic dictionaries.[11] All the kanji compounds which will be used in the reading material have been registered in the **Kanji Hatsuon Dictionary** beforehand.[12]

When the user needs to study individual kanji from the kanji compound which the **Kanji Hatsuon Dictionary** gives, it is necessary only to click on the numbered button located just above the kanji compound in each card. The program jumps to **QTKanji**, finds the kanji which corresponds to the number in the original kanji compound, and shows the kanji card. In this way, the user can review and practice the kanji which have been used in the kanji compound in the reading material.

FUTURE STUDY

There are two points that need to be discussed for future study. The first one is putting all the necessary parts together in order to run the complete **QTKanji**. The movie data for over 500 kanji have been digitized already, and about 350 kanji cards will be made in the near future. When all the kanji cards are completed, a CD-ROM containing all the movie data will be made and distributed to the institutes or individuals that want to test **QTKanji**. Chubu University is planning to set up the system which will allow other institutions and individuals can get **QTKanji** data easily by setting up an ftp site.[13]

The second point is to test **QTKanji**, evaluate the testing results, and use the information for revisions. Another pilot study has to be done on the newer version with the student's practice mode, *kakusuu-kuizu* (stroke number quiz) and the index. As for revising the program, whether or not to add new data, such as sound data, or *on* and *kun* information with caption to a movie, has to be decided.[14] It may be important to add a testing mode at the end of each lesson for the users who study step by step in the order of the *Basic Kanji Book*. Taking a study history of each student may be considered as well.

NOTES

1. Radical information is one of the keys to looking up kanji in a *kanwa jiten* (kanji-Japanese dictionary).

2. Background knowledge here means that the student's first or second language is either Chinese or Korean, both of which use kanji.

3. In order to run **QTKanji**, it requires **QuickTime** 2.0 and **HyperCard** 2.0 or higher.

4. The index in **QTKanji** may be difficult for the students who have little kanji knowledge. **Kanji Jiten** 0.8, which is also a **HyperCard** based program, can be used in such a case. It has been developed by Matsuno, Ryoji at Kumamoto Prefectural University (e-mail address: matsuno@pu-kumamoto.ac.jp). This program is designed for students who have very little kanji background knowledge. A list of fifteen different kanji patterns is shown on the first card. The pattern is based on the visual shape and it can be easily chosen without difficulty. **QTKanji** has been connected with the **Kanji Jiten**. When you get to the kanji that you are looking for, there is a **QTKanji** button at the bottom of the card. Clicking the button will take the user to the kanji card in **QTKanji**.

5. *On* and *kun* are two ways to pronounce kanji. *On* is derived from Chinese pronunciation, and *kun* is from original Japanese pronunciation. *Jukugo* are words made from combinations of kanji.

6. Being able to count the stroke number correctly is also necessary in order to look up kanji in a *kanwa jiten* (kanji-Japanese dictionary).

7. The window type that is used here is "windoid."

8. Chubu University has two intensive exchange programs among students with sister schools: Ohio University and Royal Melbourne Institute of Technology. The intensive program lasts for ten to twelve weeks every year.

9. When the pilot group tested **QTKanji**, pretests and the post tests were given. The data analysis has to be done with those data.

10. See Appendix.

11. In my class, the students can use electronic dictionaries such as Koojien, Daijirin, and Waeichuujiten by using **Syokendai** v00215 developed by Yosinaga, Naritosi.

12. As for the reading and writing class, an idea processor **Acta7** is used. This is a commercial program which was originally developed by Symmetry Software Corporation. The Japanese version, which the author uses in her composition class, is from Japan Polaroid

Ltd. Authentic reading materials chosen from newspaper editorials or short essays are put into **Acta7**. The materials are then divided into paragraphs, and a blank field is inserted above each one. Students work individually on the computer. Each student reads the paragraph and writes the summary in each blank. After finishing the reading and writing the summary, the instructor goes over the summary with the student. In the next class, the student writes the whole text from the summary sentences without looking at the original text. See Komori, 1994, for more information.

[13] The language center at Chubu University is now considering a server for an ftp site.

[14] The present version of **QTKanji** has only been tested to act properly in its retrieval of kanji running under the Japanese System (**KanjiTalk** 7). When it is used with the English system and **Japanese Language Kit**, the kanji retrieval sometimes does not work correctly. Errors occurring in the process of a two-byte character have been found.

ACKNOWLEDGMENTS

The author would like to thank Miki Ueda for her willingness to test **QTKanji** in her classes, Ryoji Matsuno for his contribution of his **Kanji Jiten**, and Masatoshi Sugiura for his help with **HyperTalk**.

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APPENDIX

The average score from the questionnaire is as shown below:

Times of using of **QTKanji** ..... 1.74 times
Length of previous study ..... 2.34 years

Before the intensive course:
How well do you remember the kanji? 2.9
(very well=1, not very well=5)

How easy was it for you to study kanji? 3.2
(very easy=1, not easy=5)

Questions about **QTKanji**:
Was **QTKanji** easy for you to use? 1.4
(very easy=1, not easy=5)

Was **QTKanji** helpful for you in remembering kanji? 2.1
(very helpful=1, not helpful=5)

Compared to studying with the *Basic Kanji Book*, did **QTKanji** help you to remember kanji any better? 2.5
(better=1, not much=5)

PRESENTER'S BIODATA

Saeko Komori is an Associate Professor of Japanese as a second language at Chubu University. She has been using computers to teach Japanese reading and writing in her classes since 1989. She has created **KanaTime** (**QuickTime** movies of Hiragana), **Kanji-Hatsuon Dictionary** (a **HyperCard** stack to learn kanji pronunciation), and **SC** (a Japanese concordance program). She has published several papers on CALL and is one of the authors of *Computer Use for Foreign Language Teaching*, 1993, Eichosha.

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CALL IN THE DORM ROOM: A PROGRESS REPORT ON LANGUAGE TEACHING VIA A CAMPUS WIDE NETWORK AND THE INTERNET

RICHARD KUNST AND TADEUSZ BEBENEK, DUKE UNIVERSITY

ABSTRACT

When personal computers were first used in language learning in the early 1980s, the universe of material available to the CALL learning program was practically confined to what would fit on a 160K single sided floppy disk. A few lessons of text, correlated with at most a few units of a textbook or course, exhausted the storage capacity of the system. With the introduction of hard disks, this universe rapidly expanded to the limits imposed by hard disk size — at first perhaps 10 megabytes at most, but by the early 1990s, hard disk capacities had increased the limits of a single personal computer several thousand-fold, to a gigabyte and more The exponential increase in storage capacity, accompanied by a parallel increase in processing speed, made possible the introduction of multimedia, including graphics, digital audio, and digital video.

At the same time as hard disks expanded, local area networks (LANs) also vastly expanded the universe of a single personal computer by linking it to a central server and neighboring machines via Ethernet cables. By 1994, on some campuses the LAN universe had become campus wide. It is now possible for students to run CALL lessons from the comfort of their dorm rooms. This presentation will describe and demonstrate how students at Duke can use PCs in their rooms equipped with Ethernet cards to connect with a central server over fiber optic cable to work through centrally stored **WinCALIS** 2.1 lessons employing authentic text and multimedia in any language of the world.

Now in the mid 1990s the popularity of wide area networks such as the Internet; information navigating systems such as FTP, the World Wide Web, WAIS, and Gophers; and especially HTML (HyperText Markup Language) Internet browsers like **Mosaic**, have all offered a dazzling new paradigm for CALL. The limits of the known universe have been pushed outward once again. Information stored at sites all over the world is instantly accessed and seamlessly integrated by a browser like **Mosaic**, as the user clicks on hyper-reference "hot spots" on the screen. Applying this new paradigm to CALL, we are led to ask, "If CALL exercises in **WinCALIS** can be made available anywhere on campus, why not anywhere in the world?"

Here the presentation confronts the technical problems of pushing the envelope: the realities of megabits per second, bandwidth, and bottlenecks; the alphabet soup of network protocols and standards like TCP/IP (Unix) and IPX (Novell); the evolving character coding mechanisms like bad-old ASCII, ISO 2022, Mime, UTF (UCS [Universal Coded Character Set] Transformation Format) and Unicode/ISO 10646; and the promise of new operating systems such as **Windows** 95, new technologies like Object Linking and Embedding (OLE), and the convergence of personal computing and telecommunications (with a potential role for SCOLA to play in it).

Some strategies for short term accommodation and long term development will be proposed, including a version of **WinCALIS** which surfs the Internet and locates **WinCALIS** 2.1 exercises, coded in Unicode, along with their linked or embedded digital multimedia files, holds them in a temporary local cache while running them, then deletes them, on the model of the Internet browsers' handling of digital video files; and a Unicode compliant version of HTML, using the **WinCALIS** 2.1 Unicode compliant editor, in order to surmount the limitations of ASCII-bound HTML, which currently uses escape sequences like "ñ" in order to display each ISO 8859-1 (Latin 2) accented character.

PRESENTERS' BIODATA

Richard Kunst is a Research Associate at Duke's Humanities Computing Facility Computer Assisted Language Learning (DUCALL) Project, where he is helping to develop full support for all the languages of the world in the authoring system **WinCALIS** 2.1.

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EXPLOITING STRENGTHS AND AVOIDING WEAKNESSES IN THE USE OF SPEECH RECOGNITION FOR LANGUAGE LEARNING

LTC STEPHEN LAROCCA, UNITED STATES MILITARY ACADEMY

It is pleasing to note that automatic speech recognition has made significant advances in the last few years, and will undoubtedly continue to do so. The technology has become better known, widely available, and accessible to courseware developers with modest programming skills. In 1991 a speaker-independent speech recognition device and associated software cost $3,500. Today, a more useful implementation of the same technology costs $150. Cost is no longer a significant barrier to those who seek to make voice interactive systems for foreign language learning.

Tempering the elation we might feel at the prospect of providing our students with systems that listen, there are a number of important limitations that need to be acknowledged and adjusted to. The purpose of this paper is to identify those limitations and suggest some techniques for maximizing the value of automatic speech recognition for CALL.

We of the foreign language teaching community have a pretty fair notion of what we ultimately want from computers in the area of speech recognition, and it is no small order. We want devices that possess human-like language skills, such as the ability to recognize any person's speech and to comprehend multiple word utterances. Vocabulary size should be large; ideally it should encompass all of the words of the language being learned. Because we are interested in teaching humans a language they have yet to master, we need devices that can recognize utterances that are not completely correct in terms of structure and pronunciation. Our ideal system would point out errors and imperfections to our students as we teachers do ourselves, and provide advice for remediation.

Existing speech recognition technology falls far short of what we would like. What is available for a modest price is a speaker-independent recognizer that discriminates between a small number of utterances, each of which is considered to be a single "word." While we wait for more capable systems to be developed and distributed, we can put the available technology to good use today through careful courseware design that "stacks the deck" in favor of the computer for all speech recognition tasks.

In practical terms, lessons constructed of multiple choice questions with spoken responses succeed in overcoming most of the weaknesses inherent in our present speech recognition technology. The simplicity and familiarity of this paradigm are its strengths. As with conventional computer based multiple choice exercises, the student's answer may be the correct answer, which causes the lesson to proceed, or an incorrect answer, which causes the computer to present the same question again, usually offering some assistance to the student.

Though limiting to some degree, multiple choice format questions need not be simplistic or mechanistic. Incorrect answers can be anticipated by the lesson developer with specific feedback provided to students who make predictable mistakes. What follows is a fragment of a text only **CALIS** script written for basic Italian. It asks the student to translate a five word sentence from English to Italian and provides personalized feedback for a variety of predictable answers. (For readers unfamiliar with **CALIS** scripts and syntax, a plus sign at the start of a line indicates a correct answer and a minus sign indicates an incorrect answer. This example makes use of "wild card" [*] and "exclusive or" [|] symbols as well.)

```
? I am eighteen years old.
?
?  <CUR: ;6>
+{Ho|Io ho} diciotto anni.; Giusto, <NAME>.
-{Ho|Io ho} diciotto anni;
&Hai dimenticato la punteggiatura finale,
&<NAME><UL>.<UL>
-{Ho|Io ho} d* anni.; Come si scrive 18?
-{Sono|Io sono} d* *; Il verbo <UL>essere<UL> è
&sbagliato, <NAME>.
-&; Prova di nuovo, <NAME>.
```

Predicted errors, such as the use of the Italian version of the verb **to be** for where **to have** is required, or misspellings of the Italian word for eighteen, result in subtle pointers to the student to help them arrive at the correct answer mostly by themselves. Unpredicted errors usually result in more general assistance to the student; for our IAV lessons at West Point, we most often show a fragment of the video clip that gives the student the correct answer, then present the question again. In the example shown above, the catch-all phrase, *Prova di nuovo*, or "Try again," is displayed.

Expanding the use of this sort of multiple choice question, rich in feedback and instructor intuitions, to accommodate spoken responses can make for realistic and engaging lessons. It is most effective when used in conjunction with other aspects of multimedia such as digital audio and video for enhanced comprehension and remediation.

When spoken answers are substituted for keyboarded answers, an additional measure of ambiguity is automatically added to the process of interacting with the computer. Since no two spoken instances of a word are ever exactly the same, automatic speech recognition must rely on probabilistic or fuzzy matches between digitized student utterances and wave forms stored as patterns in a vocabulary. Reliability is increased when the number of vocabulary items considered is small and those items are dissimilar. Writing voice interactive lessons in a multiple choice question format serves to limit vocabulary, and the careful selection of dissimilar alternatives greatly increases the computer's chance of matching a student's utterance to a stored pattern.

In an exercise focusing on listening comprehension, a student might be shown a video clip of a restaurant scene, for example. After the clip, the computer might ask the student (either by displaying the printed question on screen, or by playing a digital recording) what Mrs. Dupont was having for dinner. In French, such a question might presented as follows:

```
? Madame Dupont a envie du poisson, et elle
commande
?
?       a.  du saumon grillé.
?.      b.  un bon bifteck.
?       c.  des épinards.
+du saumon grillé.;Bien fait, <NAME>.
-un bon bifteck;<PLAY VIDEO: clip3>
-des épinards;<PLAY VIDEO: clip3>
-&;On n'a pas compris!
```

Lines preceded with a "?" would appear on the screen. The correct answer (a. "grilled salmon") would cause the *bien fait* "good work" message to appear. The other two multiple choice answers (b. "a nice steak" and c. "spinach") would result in video clip number 3, presumably indicating the correct answer, being played.

The speech recognition aspect of this lesson would require the development of a three-item vocabulary, trained for the expressions *du saumon grillé, un bon bifteck* and *des épinards*. Upon recognition of the first of these, the computer would be programmed to send the scan codes for the symbols **d,u, ,s,a,u,m,o,n, ,g,r,i,l,l,é,Enter** to the keyboard buffer location in memory. This would be seen as the correct answer, and the lesson would move forward to the next question. A new vocabulary corresponding to the multiple choice answers to the next question could then be loaded into memory at that time.

If a student correctly pronounces a wrong answer, then different scan codes would be sent to the keyboard buffer and clip 3 would be played as a hint. If the recognizer fails to find a close match between the student's utterance and the active vocabulary items, then the recognizer will signal an error and prompt the student to try again.

It is worth elaborating on what occurs when the recognizer hears something, but finds no close resemblance between what it hears and any active vocabulary item. This happens when a student coughs or sniffs, for example, in the proximity of an active microphone. It also happens when students speak nonsense into the microphone just for fun. It also occurs when students are very far off in an honest attempt to pronounce one of the active vocabulary items. Trapping this last type of error is worthy of some effort on the part of the courseware

author/designer. One promising method for doing so is to make use of the digital audio recording and playback capabilities of the recognizer.

WinCALIS and other multimedia authoring software systems allow the playback of recorded audio and the recording of student utterances in the middle of a (voice interactive) lesson. This capacity can be harnessed as a sort of help module that comes into play only when appropriate, i.e. when bad pronunciation is preventing progress in a certain lesson. Per the example already given, if the student is prompted to respond to a question with one of three answers and does not succeed in doing so the first time he or she tries, it is quite possible that a cough or some background noise or a bumped microphone is the cause of the problem. The machine should therefore do the obvious and ask the student to repeat the last utterance. If this does not lead to a recognizable student response, then a help module in the form of a pronunciation drill could be initiated.

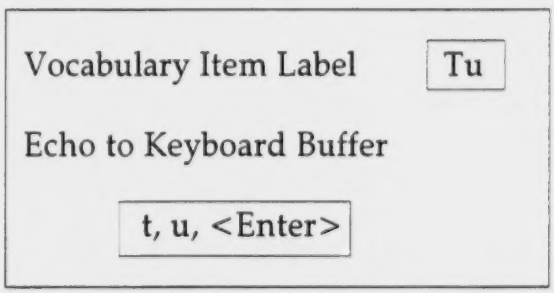
The pronunciation drill calls for students to listen to prerecorded models of the active vocabulary items and repeat what they hear into their microphone. They then listen to a sequential playback of the model and the student's own rendition, one or more times. Upon completion of the drill, the principle lesson picks up where it left off and continues to completion.

Low cost speech recognition systems are not ideally suited for use as pronunciation tutors, as they are insensitive to many of the consonantal features of short duration and to the suprasegmental feature known as tone or intonation. Even so, some very important aspects of pronunciation centered on the target language's vowel sounds lend themselves to automated teaching systems. As an example, the recognizer we use at West Point consistently distinguishes between the front rounded vowel used in the French word *tu*, and the back rounded vowel in the word *tout*. This distinction, troublesome for many anglophones learning French, can be the subject of a lesson in which the computer provides objective feedback to the student who at first hears no difference between the two sounds and often needs to be convinced that such a difference really exists.

An example implementation of this style of pronunciation drill appears in the following **WinCALIS** script segment:

```
?How does one say "you" to a friend of about the
same age in French?
?<M:prompt><CE> <CUR:prompt>
+tu;<CE>C'est ça. Bien.
-tout;<CE>Force your tongue forward in your
&mouth, and try again!
&<AUDIO: PLAY tu.wav>
&<DELAY: 1.00>
&<AUDIO: RECORD student.wav 3000>
&<DELAY: 1.00>
&<AUDIO: PLAY tu.wav>
&<DELAY: 1.00>
&<AUDIO: PLAY student.wav>
&<DELAY: 1.00>
-&;<CE><SPCK>
```

In order to implement the speech recognition portion of this exercise, a small vocabulary needs to be "trained" with multiple speakers. Each vocabulary item will have an associated behavior or "macro." The graphic below shows that when the expression *tu* is heard, the recognizer will simulate typing **tu<Enter>** at the keyboard.



This paper has proposed some ways in which low-cost speech recognition technology can be used today to improve foreign language study. Developers must realize that full-blown human like speech understanding is still years away, yet interesting and useful implementations of current technology are indeed possible today.

Since July 1994, the U.S. Military Academy's Department of Foreign Languages has dedicated some of its personnel and automation assets to a new research cell, the Center for Technology Enhanced Language Learning. Colleagues and myself in the Center are retrofitting our inventory of interactive video lessons to make them voice interactive, using the Aria 16 SE sound board from Prometheus and the associated **Aria Listener** software. For more information on the use of speech recognition for language learning, please contact the CTELL at (914) 938-5329.

PRESENTER'S BIODATA

Lieutenant Colonel Stephen A. LaRocca holds a B.S. from the United States Military Academy, an M.A. in French from Middlebury College, an MBA from Long Island University, and a Ph.D. in Linguistics from Georgetown University. He is a Field Artillery Officer and a Western European Foreign Area Specialist. His research interests include automatic speech recognition and natural language processing. He is currently assigned as Academy Professor of French and Linguistics in the Department of Foreign Languages at the United States Military Academy at West Point and as the Director of the department's research cell. This is the fifth year he has presented on the subject of speech recognition at CALICO symposia.

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THREE HYPERCARD TEMPLATES FOR QUICK VOCABULARY EXERCISES

JOHN E. LACKSTROM, UTAH STATE UNIVERSITY

ABSTRACT

The three **HyperCard** templates described in this paper make a vital contribution to the collaborative learning environment for the vocabulary component of a Spanish for business course offered at Utah State University. The students in the course are all advanced learners of the language who are proficient in the household and literary registers of the language and who have an interest in expanding their Spanish skills as they pursue a double major in both Spanish and Business.

COLLABORATION AND THE USE OF TEMPLATES

A CALL application may result in collaborative learning by creating a collaborative learning environment where the design of the program requires the cooperative activities of students and teacher. Collaborative learning resulting from program design is not the only way CALL can lead to a collaboration in education, however. The templates described here, for example, do not demand collaboration; rather they facilitate it by making the cooperative learning activities of student groups quickly translatable into useful study materials through the collaboration of the instructor.

In the Spanish for Business course, the collaboration in vocabulary learning begins with the students' forming groups once, or perhaps twice, a week to choose a predetermined number of vocabulary items from the textbook and from ancillary readings (usually 10 from each group). These lexical items become the objects of study for the vocabulary portion of the course. For each word they select, the group constructs a sentence or two using the item in a context which suggests its significance. The words and sentences from the groups are then taken by the instructor and, as a collaborator, he uses one or more of the **HyperCard** templates to author study stacks which he delivers to the students from his office computer over the campus LAN. The students have usernames and passwords and access the stacks from any of the Macintosh labs on campus.

In the scheme outlined here, the students cooperate to choose and produce the content, and the teacher collaborates by producing the study materials. The authoring templates facilitate this collaboration in that they are designed to make authoring of the study stacks quick and easy.

EXERCISE STYLES

The templates come in three styles: translation, cloze, and correct word (in Spanish, *Traducción*, *Cloze*, y *Palabra correcta*).[1] In the translation style, the user is presented with a short passage in Spanish with selected vocabulary items presented in bold face and in English.

CLICKING THE POINTER ON THE BOLD FACE ENGLISH WORD

The user's task is to replace the English vocabulary with the Spanish equivalents. This is done by the user clicking the pointer on top of the English words in bold type. This causes the program to request the Spanish translation.

THE CORRECT TRANSLATION REPLACES THE ENGLISH WORD ON THE SCREEN

If the correct translation is given, it replaces the English word on the screen; otherwise the user is advised that another word was expected and the user is encouraged to try again.[2] In the cloze style, the user is presented with a short passage with blanks. Clicking on a blank with the pointer will cause the program to request the user to supply a word in a dialog box which fills that blank. The program evaluates the answer and responds, as in the translation stack.

The correct word style of exercise presents the user with a screen on which appears a passage in Spanish with some of the words in bold type and the same passage below it in English translation. Some (or all) of the bold face Spanish words are used incorrectly

and the task of the user is to replace the incorrectly used Spanish words with the appropriate replacement according to the meaning of the passage.

STUDENT HELPS

The help available to the student depends upon the style of the exercise stack. The cloze and translation stacks incorporate a button connection to a dictionary stack (*Diccionario*), which comes empty in its initial state, but it can be added to easily by the teacher user. This dictionary connection enables the student users to see a definition supplied by the teacher for the words encountered in the exercises.

A DICTIONARY ENTRY FROM THE DICTIONARY STACK

Instead of a dictionary button, the correct word template has a "peek" function (*Atisbar*), which gives the student user a quick look at the original text. There is also a button designated *Jugar de nuevo*, which resets the screen to its initial state of blanks or words.

PRACTICE AND COMPETITION MODES

When each stack opens, the user decides between *Competencia* (competition) and *Práctica* (practice). If the user chooses *Práctica* (which is the default), screens come up in the order in which they were created, and the stacks are employed as described above.

In the competition mode, the student sees a screen which shows the high score and the champion (*campeón*) for that stack, plus buttons which allow a new competition and which reset the current score. The competition mode also replaces the ordinary forward and backward navigation buttons with one forward button which selects randomly among the screens unused up to that point in the competition. Competition is fixed at two teams (*Equipo 1 y Equipo 2*) and, when the users enter the program, one of the teams is designated to be "up" first. When the competition begins, a correct response gains the team which is "up" a point and a mistake causes the other team to go "up." The competition play may continue as long as screens remain unplayed. When all the screens are exhausted, the players are thanked for their efforts; and if one of them is the all time winner, they may enter their name as the *campeón*. In a computer lab, the competition mode allows small teams of students to compete in round robin matches.

INSTRUCTOR HELPS

The templates also include instructor helps in the form of **HyperCard** reports, which can be accessed under the "Print Report" menu item. A "Transparencies" report prints the student screen, two screens to a page. This report enables the teacher to talk about the content of the stack using an overhead projector. A "Lecture Notes" report prints the student view but adds the word lists and answer key. This provides the teacher with the exercise and the expected answers. A "Test Page" report makes it easy to construct a quiz from the existing stacks. The teacher just marks the cards she/he wants to appear on the test and then prints the report. Frankly, the result is not elegant, but it is simple. It is particularly useful when a student wants to make up a missed quiz and a variant of the original is desired.

THE AUTHOR MODE

The author mode is entered when the user types the word "author" in the **HyperCard** message box. Briefly, the authoring of each template involves typing or pasting sentences or paragraphs generated by students into a field, then selecting words in the text and clicking on authoring buttons. The process takes some learning, but it is not overly complex and is designed to go quickly once it is learned. The authoring process also adds items to the dictionary stack that accompanies the templates. Documentation accompanying the stacks describes authoring in detail.

EVALUATION

The stacks produced from these templates were first used in the Fall term of 1994.[3] As indicated by log ons to the server, they were well used by approximately 35% of the 38 students in the class. Usage was particularly heavy in the days and hours before tests. Those who used them often and regularly consistently scored well on the exams.[4] Use of the stacks was not required; and limitations on their regular use could be attributed to several factors. There was a certain technophobia manifested by several students; others preferred to study printed word lists. Some

students were put off because they had PCs at home and the **HyperCard**/Macintosh platform requirement demanded they come to a campus lab to work. In all, the generation of students with whom I worked are not yet part of the information age.[5] All but a few found it hard to find a use for computer applications beyond word processing, and over half my class had serious difficulties producing documents employing a Spanish character set in their favorite word processor. I would expect this condition to change over the next year or so as the student population becomes more and more oriented toward technology.

Given the limited employment of the stacks these templates produced in their initial test run, it struck me as all the more important that they allowed me to author quickly. Had the process cost me more than the half hour to one hour of work twice a week, I would have given up early. Hence, the value of the templates for me was the relatively small investment in time required for their use.

NOTES

1. The existing templates produce stacks with a Spanish interface, but a person with an intermediate level of **HyperCard** experience can reconfigure the interface for any language that uses a roman character set. Changes that would need to be made are changes in the button names and changes in the language of the dialog boxes.
2. The *Diccionario* button gives users an alphabetical list of the words expected on the screen, so they need not be in the dark about which words are expected.
3. The course is offered annually.
4. In addition to exams on vocabulary, homework and compositions contributed significantly to the final grade in the course.
5. Students were juniors and seniors in their mid twenties.

PRESENTER'S BIODATA

John E. Lackstrom is Professor of Linguistics, Spanish and English as a second language at Utah State University. He teaches courses in linguistics, applied linguistics, Spanish applied linguistics, Spanish language and English. His interests include language teaching methods, Business Spanish, corpora studies and computer assisted language learning.

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YESTERDAY'S RENOVATION: TODAY'S LAB — HOW IS IT REALLY WORKING?

PETER LAFFORD AND BARBARA LAFFORD, ARIZONA STATE UNIVERSITY

ABSTRACT

Arizona State University has just opened the new language learning laboratories, the result of two years of research, planning, and renovating for our traditional language lab. These new labs consist of a 56-seat language audio/video Laboratory (a Tandberg IS-10 with console based audio and video, and student-controlled video); a 58 multimedia PC Language Computing Laboratory (running **Windows-for-Workgroups** networked to a **Windows** NT Server; half are also equipped with a TECH Commander computer classroom instruction system); a recording facility; and a Rauland-Borg Ranger Media Management System distributing video and multimedia computer capabilities to six mediated classrooms and the audio/video consoles.

By the end of the 1994-1995 academic year, we will have spent six, twelve, and eighteen months with the Ranger, computing lab, and audio/video lab, respectively. We are now ready to take a critical look at the process and the result: what has worked well, what hasn't, and what we would not do the next time. The presentation will include video and computer based representations of the facility, as well as some in house software developed by faculty and students in Asymetrix **ToolBook**, a GUI hypertext authoring system for **Windows**.

In particular, the presentation will address the renovation process including:

- Research (of departmental needs, of current labs here and at other institutions, of the current technology, and market);
- Planning (of functions, the desired software and hardware, layout and design, and of the renovation schedule);
- The renovation itself (the bureaucracy, the bid process, the architect, the design, the contractor);
- Acquisition and installation (of the equipment, the lab consoles, the peripherals, the software — network, applications, tutorials, and in-house development); and
- Implementation (including training and promotion among the faculty, scheduling the facilities, staffing, orientation, and maintenance).

We will conclude with a critical assessment of the renovation project. This will be a most-informative session for anyone about to design or enhance a computer assisted language laboratory.

PRESENTERS' BIODATA

Peter Lafford managed the creation of the Language Computing Laboratory and now serves as its Director. Previously, he provided hardware and software support to the Foreign Language and English Departments and created and administered the building wide Banyan LAN as Manager of the Humanities Computing Facility. Ten years a computer expert, he has developed ESL and commercial tutorials in **SuperPILOT**, **PC-PILOT**, and **ToolBook**. He attended the LARC Multimedia **ToolBook** workshop in 1993, and is interested in further CALL development.

Barbara Lafford, Associate Professor of Spanish and Linguistics, served on the Language Technology Committee throughout the recent Language Lab renovation project. She attended the LARC Multimedia **ToolBook** workshop in 1993, and is working on software for the new Language Computing Laboratory. Past President of the Rocky Mountain Modern Language Association (RMMLA), she has served as President of the Arizona Foreign Language Association (AFLA) and on the Board of the Southwest Conference on Language Teaching (SWCOLT). Recipient of teaching awards from ASU and the Arizona Foreign Language Association (AFLA), she publishes on Hispanic linguistics, L2 acquisition, and pedagogical issues. She also has interests in international programs.

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DIALOGUE GENERATORS: THE NEXT GENERATION

ANDREW LIAN, JAMES COOK UNIVERSITY — AUSTRALIA

ABSTRACT

Joy and Lian (1983) defined dialogue generators in the following way:

> A **dialogue generator** is a computer system which synthesizes dialogues from a given number of compatible component parts. Upon request, it is able to assemble, almost instantly, a very large number, literally thousands, of realistic language interactions and can continue to do so forever. The nature of these dialogues can vary widely according to the aims of course designers.
>
> Dialogues are not prepared by the teacher or some other person but are assembled according to the pre-determined algorithms. Both dialogue components and their combinations should be such as to produce coherent and, at very least, not unnatural discourse.
>
> Although it is acknowledged that life cannot be scripted, we would also argue that examples of natural interactions will nevertheless contain a number of generalizable features which must not be ignored. It is these generalizable features which will inform modules produced by our dialogue generators and which will be drawn upon in various combinations to create examples of interaction which, by consensus, would not "jar" on native speakers.

This paper will discuss and demonstrate prototype working systems developed on the basis of the above models. They will include examples of:

- a working dialogue generator,
- a system for presenting dialogues orally through the use of digitized speech technology,
- a system allowing learners to record their voice and take part, in a limited way, in practice dialogues/interactions with the computer and to review these interactions.

Though not meant to replace real conversation, these systems provide opportunities for more realistic and constructive private practice than has been the case in the past.

The presentation will conclude with an examination of the impact and pedagogical implications of using dialogue generators in relation to individualization of learning, task-based learning, self-managed systems and distance education.

REFERENCE

Joy, B., and A-P Lian (1983). "The Butcher, the Baker, the Candlestick Maker: Some Uses of Dialogue Generators in Computer Assisted Foreign Language Learning." *Australian Review of Applied Linguistics* 6, 2, 60-71.

PRESENTER'S BIODATA

Andrew Lian is Professor of Modern Languages, Head of the Department of Modern Languages, and Director of the Institute of Modern Languages at James Cook University, Townsville, Queensland, Australia. Prior to that, he had been Professor of Computer Enhanced Language Learning and Director of the Language Center at Bond University, Gold Coast, Queensland, Australia. He teaches French language and applied linguistics, and his field of special interest is in language teaching methodology with special reference to the use of technology in language learning.

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TOWARD A DISTRIBUTED INTERACTIVE MULTIMEDIA AUDIOVISUAL DATABASE

ANIA LIAN, UNIVERSITY OF QUEENSLAND – AUSTRALIA

ABSTRACT

This project attempts to create a system allowing for quick retrieval and distribution of multimedia resources which would, otherwise, be available only in print or on video and cassette tapes. These resources respond to the requirements of modern learner centered approaches to second language learning and teaching: a kind of multimedia dictionary.

A key issue in this project is the belief that learners are individuals, with different strategies for language processing; where the nurturing of each student's individuality is critical to successful learning of a second language.

With this in mind, the focus in designing such an environment is to provide an infrastructure which could offer students the opportunity of operating individually and yet always have cooperative and informative support available (Lian 1988). Such an environment, if designed for this purpose, should facilitate awareness-raising, development of learning autonomy and contribute to learner achievement (Lian 1987).

Typically, students engage in task based learning or learner centered activities needed to solve language problems in order to fulfil their tasks or objectives. In order to do so, they need to examine examples of relevant language activities, to consult dictionaries and otherwise, access and retrieve relevant information. Furthermore, as their focus is on achieving a goal, they need to retrieve relevant and rich information quickly and with as little drudgery as possible so as not to lose the focus of their work.

At the same time, the presentation of resources according to communicative tasks should help learners focus on the communicative aspects of linguistic behavior rather than on discrete items.

Such systems will be made available locally through individual PCs or through networks. This project, though prototyped on a local area network will, in the foreseeable future, be made available through the Internet.

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PRESENTER'S BIODATA

Ania Lian is a postgraduate research student in the Center for Language Teaching and Research at the University of Queensland. She is completing a Ph.D. which examines the relationship between students' production or errors in German and the award of proficiency levels. She is also specializing in the application of technology to teaching and learning, including the use of electronic networks in language teaching and the development of practice dialogue systems.

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EVALUATION OF INTERACTIVE VIDEODISC COURSEWARE: EFFECTS OF STRATEGY TRAINING AND COLLABORATIVE LEARNING

HSIEN-CHIN LIOU, NATIONAL TSING HUA UNIVERSITY – TAIWAN ROC

ABSTRACT

The paper addresses evaluation issues of interactive videodisc (IVD) for CALL purposes from the perspective of learning strategy research. The study investigates strategy use by examining observational and experimental data. First, the think aloud procedure was used to collect mentalistic data while 10 effective EFL learners were learning in an IVD language lesson. Effective listening and viewing strategies were identified, classified, and implemented into a revised version. Then, 81 EFL subjects were classified into a control group and an experiment group. After they took the pretest, the control group was asked to use the non strategy version of the courseware; the experiment group, the strategy version. After on-line practice, subjects took a posttest with comprehension questions and a recall summary. In the second phase of the comparison design, 33 subjects out of the 81 were further divided into a group who received another session of individual on-line non strategy training, and another collaborative group who worked with peers on the strategy version. Last, a delayed posttest was administered in the posttest or delayed posttest sessions. No differences were found as for effects of strategy training or collaborative learning. Future directions and implications are discussed.

The paper addresses evaluation issues of interactive videodisc (IVD) for computer assisted language learning (CALL) purposes. Recently, the learning process has become of paramount importance and learning strategies are believed to shed light on the process. Yet little strategy research in IVD environments has been conducted, and further, viewing comprehension has seldom been documented so far. The current study, to address the needed research, investigates strategy use through looking into observational and experimental data.

THE OBSERVATIONAL STRATEGY DATA

In our series of evaluation studies on interactive videodisc computer assisted language learning, data on listening and viewing strategies are urgently needed in the evaluation–revision cycle during courseware development/revision. That is, after formative evaluation results are clear, summative evaluation can be conducted in a rigidly controlled experiment designed to verify which design features in IVD/CALL are effective for language learning as opposed to lack of the features, or the other kinds of features.

For the descriptive formative evaluation, the material used is an IVD lesson using an English feature film (Liou 1994) where users have full access to the videodisc player control, forward, pause, backward, etc. In addition, various levels of on-line help are implemented in the courseware: English script, Chinese script (the students' first language), background information, glossary, repetition of the utterances, etc. Ten effective second-year EFL college learners were recruited in the study. Each of the 10 subjects was asked to think and talk out loud while using the IVD program. Fifty-four comprehension questions were designed to sequentially display on the computer screen while the film is showing. Each question showed up when the videodisc was paused. Subjects were asked to talk about what they are thinking, how they get to know the answer, and what they do not understand. The procedures took around fifty minutes. The think aloud protocol was recorded by a cassette recorder and transcribed. Then, effective learning strategies used for listening as well as viewing were identified and classified by my colleague, Professor Yen-Lung Shieh. We found that an effective learner tends to, for example, attend to more audio and visual clues at a time, use both personal experiences and linguistic context to determine the meaning of utterances, and use more organizational devices to synthesize new and old information.

Effective strategies identified were used to expand the version of the IVD/CALL material so that the new version could be used in a follow up experimental study.

THE COMPARISON EXPERIMENT STRATEGY DATA

A short review of relevant literature is presented. O'Malley, et al. (1985) trained ESL learners in listening strategies: note taking, selective attention for specific linguistic markers, and cooperation, a balance of three types of strategies — cognitive, metacognitive, and affective types. Their subjects included 75 high school students. They found this interaction between strategy effectiveness and task difficulty: with too difficult a task, the training may fail to compensate for the complexity. They suggest that explicitness of directions for using the strategy is important for the effectiveness of training. In the EFL context, Chou (1992) investigated the effects of four kinds of help in a hypertext reading program: text only (no help), text with on-line vocabulary help, text with on-line sentence structural analysis, and text with strategy help (strategies of skimming, organization, guidelines to each paragraph, and supplementary information). He then randomly divided 39 high school students into four groups to work on the four versions. He found that types of help did not make a difference on reading comprehension among groups of subjects. Meskill (1991) implemented strategy training in a multimedia conversation database lesson, and documented her observation. Thirty-four ESL college subjects were asked to use an IVD lesson with six types of advice messages implemented in the lesson. Another version of the IVD lesson did not incorporate strategy advice. Subjects were randomly assigned to either of the versions. Results showed that most of the subjects read the advice messages and liked to follow the advice. As far as learning gain, time on task, and amount of material accessed, no significant differences were found between the advice and the non advice groups. This study again confirms that learners vary with appropriate strategy use: good learners (with higher language proficiency) know what to do but weak learners need direct advice.

In spite of the available strategy literature in CALL contexts, the strategy training research is sorely needed because the available evidence is not enough to tell the language learning field how the training can be effective in CALL context. In the second part of our current research project, a comparison experimental study was conducted.

Our study was conducted in a very classroom like situation although the design was experimental in nature. We feel that the design included all the control we could have and the procedures were quite similar to what happens in other CALL contexts if language teachers would like to reinforce strategy training using supplementary CALL material. It was conducted in two stages. Except the one shot on-line session (about 50-70 minutes) in each stage, all the other activities were conducted in regular class sessions. In the first stage, 81 college freshman students were recruited as subjects. A pretest was given which included a comprehension test with 20 multiple choice questions in English and a Chinese summary recall task (between 110-130 Chinese characters in length) after they viewed a 30 minute video clip twice. Then, a Chinese handout of the names, explanations, and examples of the target strategies in the study was distributed. After the pretest tasks, all the subjects were working on the on-line practice. They were divided into two groups based on their student identification numbers. The odd number group took the strategy version of the courseware, while the even number, the non strategy version. The posttest procedures followed exactly the same as the pretest's, except that subjects watched a different video clip and worked on a different set of multiple choice questions.

Three types of strategies were targeted: metacognitive, cognitive, and affective strategies (O'Malley, et al. 1990; Oxford 1990; Wenden and Rubin 1987). Based on the results of the first study, we chose "perceive visual/aural clues" and "use context" strategies. Based on our pedagogical experiences, we chose the other common listening strategies deemed effective during viewing feature films. In combination with the purpose of the viewing tasks — comprehension checks and summary recall, three strategies which have close connection with the paper and pencil tasks are taught at the same time: selective attention, note taking (on paper), and summary writing (on paper). The selective attention strategy is to ask subjects to read the multiple choice questions before they view the video, so that their attention would be focused on video details related to the questions. The reason why we targeted several strategies together was based on a belief that effective strategy use is derived from a combination of several kinds together.

The metacognitive set was given on screen in Chinese as a questioning strategy which can be classified as planning, monitoring, and evaluating types (King 1991). For example, "What information is given to

us?" "How can we make use of the information?" "Are we on the right track, close to our goal?" "What worked? What didn't work?" Seven cognitive strategies were embedded with video content (major strategy set). Three strategies related to the overall viewing purpose: note taking, summary recall, selective attention (minor strategy set). "Be confident" and "be cooperative with peers" are two effective strategies.

Many variables are involved in training learners to use strategies effectively: learners themselves, task, training, or content. Generally, most scholars believe direct strategy training can be effective and several components of it are crucial (e.g., Wenden 1991; Winograd and Hare 1988). Teachers should describe what the strategy is, why the strategy should be learned, how to use the strategy, when and where the strategy is to be used, and how to evaluate use of the strategy. Our design of strategy training instruction follows this scheme. Our major strategy training consists of (1) a handout which explains the name of a strategy and how it works, distributed before on-line practice; (2) subjects' on-line learning exposed them to strategy messages, including the list of the metacognitive strategy set, and contextualized cognitive strategy training; and (3) off-line training in three strategies combined with task requirements before, during, or after on-line practice — answering multiple choice questions, taking notes, and writing a summary recall. The "when" and "where" components of strategy training were implemented in the computer program. At appropriate points, the program displays a message in Chinese such as "Can you predict what will happen in the video?" or "What kind of person is so-and-so? If you think the character, so-and-so, is doing XXX, you are on the right track."

In the second stage, only 33 out of the original 81 subjects participated. Seventeen of the 33 still worked on the non strategy version with a different video clip individually, whereas sixteen of them worked in either pairs or trios together. In both stages, all subjects were asked to work on several multiple choice or short answer questions while on-line and to write a Chinese summary after they finished the viewing. The 33 subjects took delayed posttest tasks, again answering multiple choice questions and writing a Chinese summary, as they did in pretest and posttest. Various on-line behaviors were recorded by the internal designed trackers in the IVD program.

In grading the recall summaries, three investigators together determined the crucial facts which should be included in each version of the three summary tasks. The facts were further divided into more important idea units and important units. The important unit gets one point, whereas the more important unit gets two points. Each of the summaries in all the data was read by two scorers individually. Then they met to resolve discrepancies.

Results indicated that although all subjects were randomly divided into two groups, the strategy or experiment group outperformed the non strategy or control group in the aspect of multiple choice items, but not summary writing in the pretest measurement. As for the effect of strategy training and collaborative learning, while the strategy group did better in almost all the kinds of measures in both the posttest and delayed posttest sessions — multiple choice items, summary writing, more important idea units, and important idea units — the differences were not shown to be statistically significant. As for the time on task in the first stage, the strategy group took more time to complete the task than the non strategy group, which was shown significant ($p < .003$; $t = 3.30$; the strategy group spent 49 minutes as a group but the non strategy group, 41 minutes). As for the effect of collaborative learning, to our surprise, the non strategy group who worked individually, improved in the delayed posttest multiple choice measure (not summary writing), but did not in the immediate posttest measures.

Due to the availability of IVD stations — only three, we had asked all subjects to work on the courseware only once for the treatment, or on-line practice of strategy training. Lack of enough practice is for sure the cause of no difference in the training effect. As for the effect of collaborative learning, the individual group, though not receiving strategy training, had exposure to the strategy handouts and learning material in two on-line sessions, which amounts to some form of input for their language acquisition. Future studies should solve the resource limitation problems and let students use the computer material more. Because an increase trend is evident, given more practice, positive results in the training may be anticipated. It is also possible that the non strategy group is more sensitized to strategy instruction than the actual strategy group. We gave three questionnaires in the pretest, posttest, and delayed posttest sessions to survey subjects' strategy use, beliefs, and preference, but the results were not analyzed in time for reporting at this writing.

In conclusion, this study confirms that the training of learning strategies is very sensitive to many variables. The greatest limitation in the study is a lack of enough instructional time or learning time provided for learners. Yet, the study demonstrates a good example of incorporating CALL strategy training into the regular curriculum, and the feasibility of implementing strategy training in multimedia CALL courseware and using such material for individual learning, as well as collaborative learning.

ACKNOWLEDGMENT

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COLLABORATIVE SOFTWARE FROM THE LANGUAGE 3 INITIATIVE

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ABSTRACT

In order for technology to be integrated into the language curriculum, an effective, on going collaboration among departments, teachers, and students is necessary. Institutions where large scale technology integration projects have occurred are examined, and the collaborative nature of four such programs will be outlined. Two programs developed collaboratively for collaborative student use will be demonstrated.

PRESENTER'S BIODATA

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COURSEWARE DEVELOPMENT ON CD-ROM USING THE WINCALIS SYSTEM

MOHSEN MAHDAVI-HEZAVEH, DUKE UNIVERSITY

INTRODUCTION

In this paper I discuss the methodology, design, and development of an intermediary computer courseware package on CD-ROM for a right to left language (Persian). The **WinCALIS** system (authoring and viewer software plus **CALIS** language) is employed in developing this product. The product takes advantage of all features of the **WinCALIS** system to present an easy to use, mouse driven, navigational, multimedia, interactive courseware in the Microsoft **Windows** 3.1 environment. A demonstration of this courseware is provided with the CD-ROM version of this paper.

METHODOLOGY

Performance Oriented Training (POT) places the student in the active role of learning by doing. It requires that s/he meet the training standards with 100% accuracy.

When determining the best (or combination) of methods of instruction, one has to consider how students learn, the nature of the subject of matter, student ability and background, instructor ability, and background and resources (time, facilities, etc.).

Performance Oriented Training (POT) is the best method to use when tasking psychomotor (hands on) skills are required of the trainee.

The stringent criteria of performance training can only be met through the diligent application on the part of the instructor on the following Principles of Performance Training:

- Present only the information the student must know.
- Present the essential "how to" information only when the student needs it.
- Require immediate application of the "how to" information in the task performance.
- Permit students to learn each step and develop skills at own pace.
- Aid student learning by coaching.
- Establish quality control by administering performance tests that require GO/NO GO (Pass/Fail) criterion.

Performance Oriented training is conducted in four phases: **Prepare, Present, Practice, Perform.**

In the **Prepare** phase, the instructor prepares the class by stating the objective (task, condition, standard, the reasons [why he is learning the task], any cautions [personnel and equipment safety]), and offers a pretest.

The **Present** phase consists of three distinct steps: demonstration, walk through, and talk through. The demonstration is less than 60 seconds long. It is done at normal speed without talking during the demonstration. The instructor also may opt to only show the finished product. During the walk through, the instructor tells the students what the task step is, shows them how to do it, and then has them do the same step. This continues step by step until the task is complete. The only difference between a *talk through* and a *walk through* is that the visual stimulus (showing how) is removed *while* conducting a *talk through*. Remember, coaching is required throughout these three steps. When conducting a *walk through*, use the following principles:

- Demonstrate the task from the student's viewpoint.
- Carefully explain each step as you demonstrate.
- Emphasize key points to ensure successful and safe task performance.
- Require the students to perform each step after you have performed and explained that step.
- Ensure the students can see the demonstration.
- Use words the students can understand.

During the **Practice** phase, the student is given time to practice the task at his own pace. This allows them to build confidence in their ability to accomplish the task. Remember to coach when necessary, and if you must correct student performance, have them redo the step to show you that they can do the step themselves.

The final phase is the **Perform** phase. Here the student is tested to determine if he can perform the task to standard under the specified conditions. This is accomplished by following these guidelines:

- Ensure the equipment and materials are set up or arranged as specified in the testing and are in the required testing location.
- Always read the instructions to each student in the same way and in the same tone of voice. Be sure each student understands the instructions.
- Ensure your demeanor, posture, facial expressions and attitude is the same for each student.
- Score each student on all items of the test. Do not assume that a student who can do a few steps correctly can do all the steps correctly.
- Don't give any student the benefit of the doubt. Do not assume that a student who leaves out a step during the test will remember it on the job.
- If a student makes an error during the test don't correct him. Also, don't tell him when he does something right.
- If the student receives a "NO GO" on the test, explain what he did wrong and how to correct it.
- Follow the procedures prescribed by your unit for giving remedial training to students who received a "NO GO."

Figure 1 illustrates the described methodology.

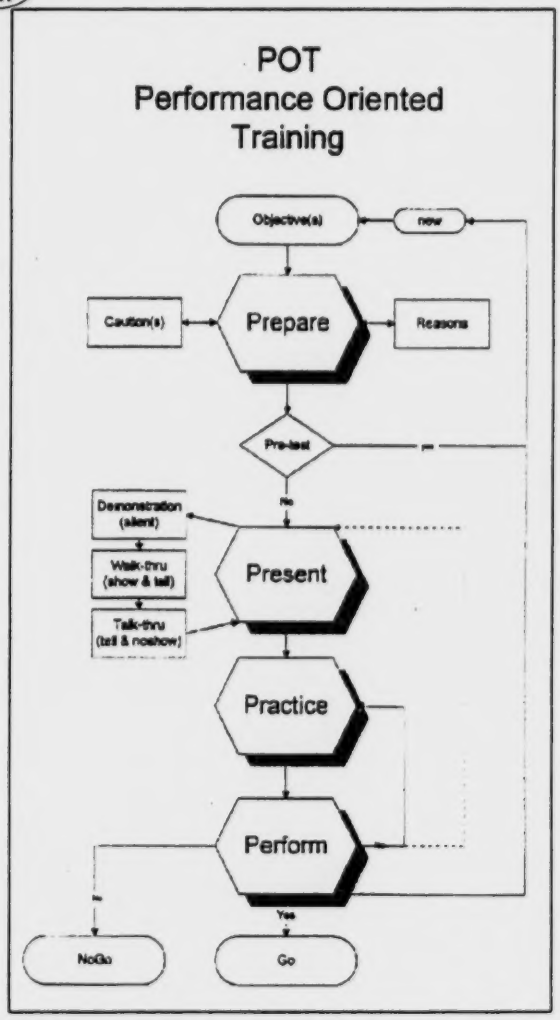

Figure 1.

LESSON DESIGN

The lessons in this project have been designed with the above mentioned methodology in mind. If we assign the levels 0 to 5 to no language knowledge to very good, then these lessons have been designed to improve the language knowledge of the students from 2+ to 3 and 3+. There are one or two lessons whose levels reach 4 and is intended to be used at the end of this computer courseware.

The lessons have been designed in such a way that students with levels 1 or 1+ also can benefit from parts of each lessons. For this purpose they have to follow the directions provided in the introduction. Since the emphasis of this courseware is on listening comprehension, the design of the lessons does not involve student in too much reading or writing. The subjects of the videos which are the same as the lesson subjects are all varieties of topics which familiarize the student with different situations and present them with the vocabulary and phrases needed for those situations.

The subjects have been chosen from the news reports on TV and the selections are done in such a way to cover timeless contents and texts so that the materials presented will be relevant in the future and the courseware would be useful in years to come. The subjects cover:

- schools and teachers
- teaching language, recreations and sports
- politics and religion
- road and weather reports
- books and press
- tourism
- workers in the factories
- industrial and development projects
- pollution
- discoveries
- oil
- ethnic groups
- literature, culture, and intercultural significances

Since an important part of learning a language is a knowledge of the culture of the people speaking the language, many cultural aspects of the country are presented in branches and are accompanied by music, scenery, painting, and poetry.

Sometimes these features instead of being in a branch, are presented parallel to the lesson in buttons that the student can click. These features are all options and are left to student curiosity and his/her pleasure of the discovery. Overall the package is a very attractive and appealing adventure and the student will not be bored by going to a dry lesson. Since the project is listening comprehension, in the cultural parts many music icons are available to sharpen the ears of the student and put him/her in mood of the people speaking the language.

SCREEN DESIGN

The elements contained in a screen presenting a task for student or providing just plain information to the student can be any of the following items:

- Text
- Graphics
- Audio
- Video
- Buttons
- Check Boxes

The text element is a Unicode text in any language of the world. In this presentation English (left to right), Persian (right to left), and occasionally Arabic (right to left) is demonstrated.

Graphics can be included in variety of modes either as plain graphics for presenting some visual information or as a hot spots leading to very different actions. The actions in this project usually are the following:

1. Clicking the hot spot leads to answering questions or being presented by some information.
2. Clicking the hot spot leads to moving to next or previous task or item.
3. A hot spot acting as an icon. The icon can be of three kinds: plain graphic icon, audio icon, and video icon. Clicking on any of these icons will take the user to a branch presenting some graphics, audio or video during the transition. The branches are very similar to those in **HyperCard** used in Macintosh computer.
4. Clicking on the hot spot icon of any of the above types will exit the user from the present branch and bring her/him to a lower level branch or main lesson.

The third element is a plain audio clip that can be heard while entering the task screen which controlled by an MCI control bar or it could be on the screen through the intermediary of any of the hot spot icons described in Figure 3 or the buttons.

The fourth element on the screen can be a video clip that can be presented to the user while entering the task screen and it is controlled by an MCI control bar or it could be on the screen through the intermediary of any of the hot spot icon branches described in Figure 3 or the buttons.

The following are three examples of three screens containing the above mentioned elements with their sub elements. Figure 2 shows the elements and the subelements of an screen. Note that any of the subelements in Figure 1 can lead to a new screen with similar hierarchy of the screen in the figure.

Figure 3 shows a typical screen containing the elements Unicode text, Digitized Video, Graphics of different types (one for clicking to answer the question, two hot spot icons for transition to next or previous tasks, another one being an audio icon leading to a branch and new screens, a multimedia MCI Control Bar, a button containing a map accompanied by music and text).

Figure 4 shows another typical screen containing the elements Unicode text (right to left Persian text being hot spots for mouse clicking), Digitized Video, Graphics of different types (two hot spot icons for transition to next or previous tasks, another one being an audio icon leading to a branch and new screens, a multimedia MCI Control Bar, a button containing the translation of the text into English).

Figure 5 shows another typical screen from one on the branches in the main lesson containing the elements Unicode text in Persian and (right to left Persian text being hot spots for mouse clicking containing audio with explanatory text in Persian and English), Graphics of different types (two hot spot icons for transition to next or previous tasks, another one being an audio icon exiting from the branch to the main lesson, two buttons containing the translation of the text into English and the audio of the Persian text shown on the screen.).

Figure 6 shows another typical screen from one on the branches in the main lesson containing the elements Unicode text (mixed left to right and right to left text) and (right to left Persian text being hot spots for mouse clicking containing audio with explanatory text in Persian and English and one is shown with the word Friday written on what in **WinCALIS** viewer terminology is called a feedback window.), Graphics of different types (two hot spot icons for transition to next or previous tasks, another one being an audio icon exiting from the branch to the main lesson).

DEVELOPMENT

This multimedia computer courseware has been developed using the **WinCALIS** system. The **WinCALIS** system consists of three components: The **WinCALIS Author**, **CALIS** language, and **WinCALIS Viewer**.

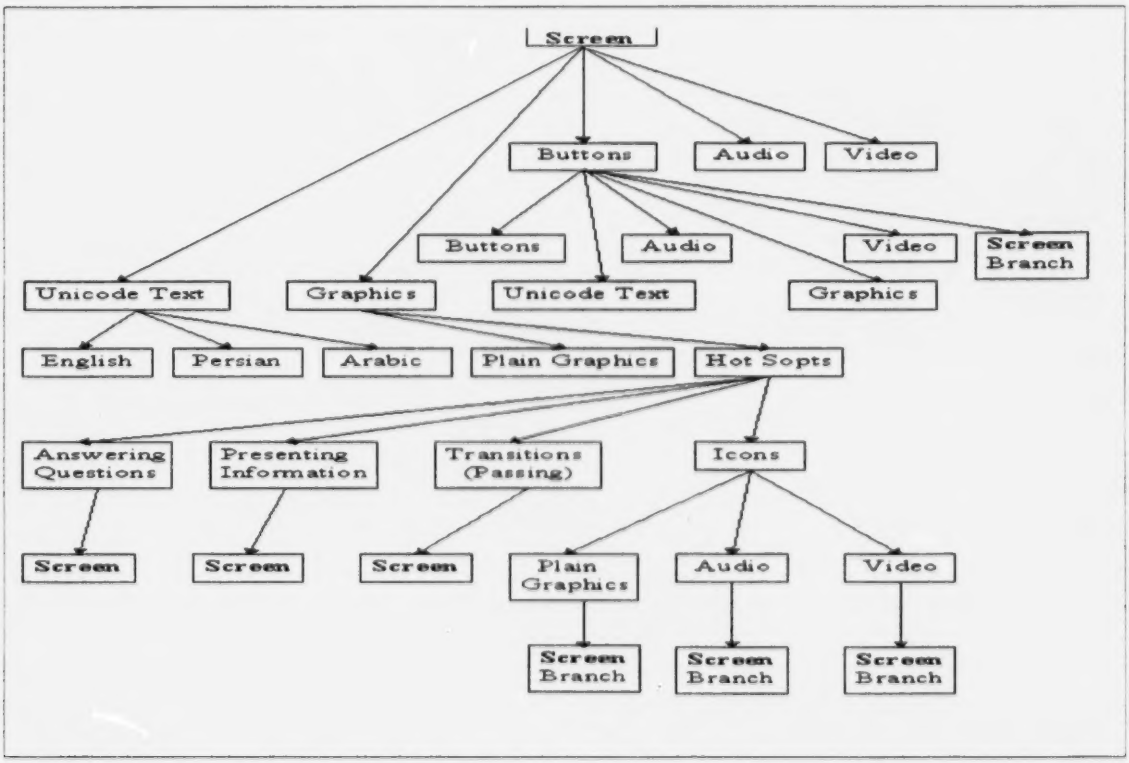

Figure 2.

Figure 3.

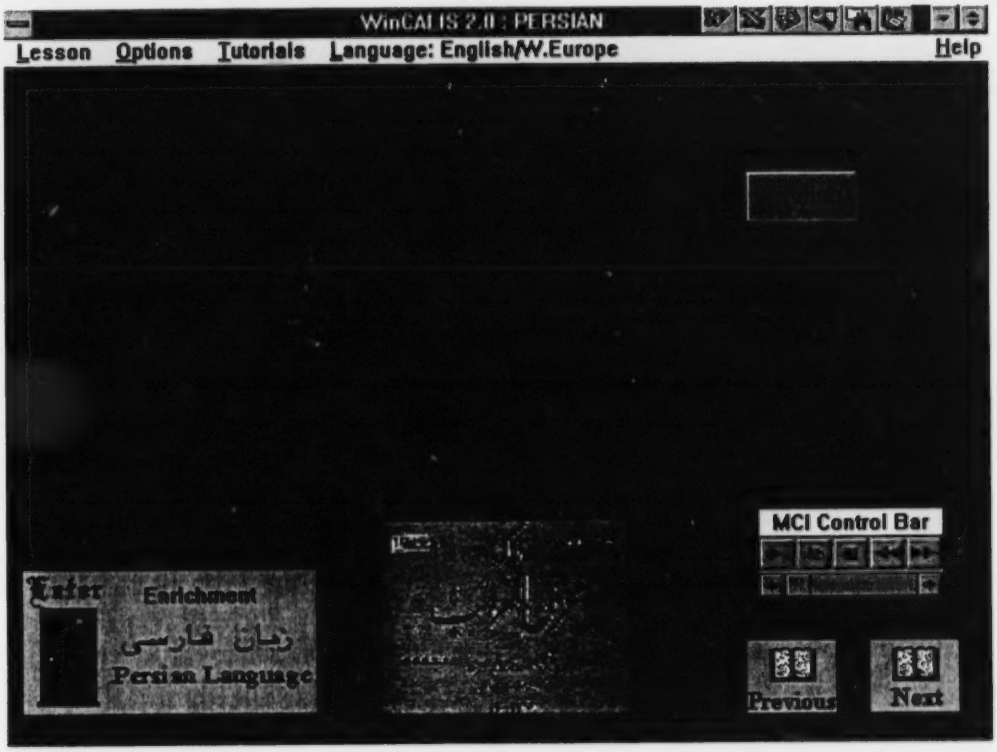

Figure 4.

BEST COPY AVAILABLE

Figure 5.

Figure 6.

WinCALIS Author

This component of the **WinCALIS** system is used by authors or teachers to create lessons or course materials or any other material in any field for presentation in a computer environment or electronic form. It is a powerful authorware, built with a Unicode text editor as its foundation and has editing and processing capabilities for all the languages of the world. The **WinCALIS Author** automatically inserts all the elements of multimedia such as graphics, audio, and video inside the script for the user to use. It has a multimedia editor and a Unicode multilingual printer (for both true type and bitmap fonts) as its back bone components.

The **WinCALIS Author** is a user friendly system with the ability to generate a variety of tasks automatically using a script written in **CALIS** (Computer Assisted Language Instruction System) authoring language. Most of the features and tools needed by users are automatized and the advanced user can use the **CALIS** language commands in the **Author** to enhance and refine his/her creation and shape it into a professional, powerful application or courseware, in our case. The product of the **WinCALIS Author** is a script that is viewed by student or a general user using **WinCALIS Viewer** (or interpreter). The script can also be further modified manually in the editor for more complex and sophisticated products. In our implementation of this project we have developed 95% of the work using the **Author** and for the remaining 5% we have employed the second component of our system which is the **CALIS** language.

CALIS Language

CALIS (Computer Assisted Language Instruction System) language is a high level computer language designed for teaching languages in an easy to grasp program for teachers who don't have any computer background. They only need an editor to type with a basic knowledge of how the commands are interpreted into a nice final product. They need only visualize their ideas to screen format with some utilities especially designed for techniques of teaching and learning languages in mind. The scripts written in this language are interpreted and viewed using the **WinCALIS Viewer** (interpreter).

WinCALIS Viewer

WinCALIS viewer (interpreter) is the third component of the **WinCALIS** system. It is a user friendly piece of software designed to interpret the **CALIS** script and create the visual effects (including multimedia effects: audio, video, graphics, text, etc.) and language processing tricks that have been conceived in the **CALIS** language. This system also utilizes a Unicode editor for its text processing in all languages of the world.

All the above components have been developed at Duke University and have been ongoing projects developed for different software and hardware environments of PCs for over ten years. They are also open ended evolving projects and have absorbed many common techniques and expertise in various disciplines and will include more features and techniques in authoring, viewing, and other visual effects.

CONCLUSION

The 15 lessons on the CD-ROM have been regarded as an appealing and attractive package by the people who have been viewing them during the development and those who have reviewed the final package. This is a promising way of producing computer courseware comprising all the media known (hardware and software) in computer technology so far, and it has its own comfortable and fitting role in the age of the information superhighway.

PRESENTER'S BIODATA

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DISTANCE LEARNING AS A COLLABORATIVE EFFORT

PETER MASON, LINGO LANGUAGE PROJECT

ABSTRACT

Lingo is a new language learning and translation service operating in Germany. It aims to give language support to companies and individuals over the ISDN networks and in a multimedia environment. Lingo has a distance learning vocation and addresses the central need to create adequate communication infrastructures in a computer network environment.

Three main partners have been active in the creation of the language learning aspect of Lingo: Siemens, which has provided the programming skill; Ernst Klett Publishers, which has provided the learning resource material, and the Pädagogische Hochschule which has provided the learning architecture and environment.

This joint effort is mirrored in a distance learning conception which stresses a collaborative effort between the following groups:

- Students: peer group support mechanism and communication based activities simulations.
- Staff: joint planning and communication and exchange of resources.
- Institutions: joint learning and teaching experiences and virtual exchanges of resources and students.
- Software Developers and Service Providers: Siemens, CPI, Klett, and the Pädagogische Hochschule in Karlsruhe.

Lingo aims to offer a wide range of lessons on the ISDN network to groups of students in different language institutions. The system architecture is a modular one, allowing various service providers and client centers to collaborate together. The high performance ISDN lines allow multimedia data to be transmitted more easily from site to site than in a normal telephone network.

The presentation will concentrate on the choices made at the design stage of Lingo and how these have influenced the collaborative environment. The prototype will be demonstrated and specimen student/network interactions will be analyzed. The implications of using a predominantly sound/picture environment (rather than text) in distance learning will be examined.

The presentation will also be of interest to all those involved in distance learning and also those interested in the exchange of resources in a global network.

ACKNOWLEDGEMENT

Much appreciation is given to Bernd Rüschoff of the Pädagogische Hochschule in Karlsruhe for his contribution to this presentation. Dr. Rüschoff was originally scheduled to co-present, but due to other obligations, was unable to make the trip to the U.S.

PRESENTER'S BIODATA

Peter Mason worked for the British Council in Algeria and was head of Computer Assisted Learning at Seltec working with a wide range of students in different disciplines. From 1990–1994, he was in charge of the distance learning project "Newspeak" to help improve efficiency in language learning in France Telecom. He has recently joined the Lingo Language Project sponsored by Siemens and the Deutsche Telekom which aims to set up a wide network of language services. Peter is particularly interested in the communication side of CALL. He is also the author of two interactive video adaptations of the BBC titles *Bid for Power* and *The Lost Secret*.

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GENDER AND PERSONALITY DIFFERENCES DURING A COMPUTER BASED FOREIGN LANGUAGE COLLABORATIVE ACTIVITY

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INTRODUCTION

The primary purpose of this presentation is to discuss group dynamics during a cooperative computer based French activity taking into account both gender and personality differences.

During the previous decade, the principles of communicative language teaching paved the way to a greater use of techniques involving group activities in foreign language classrooms. Cooperative learning has shown to enhance motivation and learning outcomes in the foreign language classroom (Rivers 1987; Kramsch 1987; Long and Porter 1985; Davies and Omberg 1987; Pica 1987; Pica, Holliday, and Lewis 1991). With the advent of technology, computers have become new participants in communicative language programs. As a result of computer use in L2 classrooms, sociodynamic factors (e.g. working together, peer teaching, friendship, positive atmosphere) affecting language acquisition have taken new shapes.

Contrary to what was earlier feared, i.e. that computers were going to isolate students and negatively affect the efforts made in communicative language teaching, Johnson (1991) indicates that the CALL environment is, in many instances, promoting more authentic interactions, which, as such, are more motivating than textbook based cooperative tasks. Indeed, research has shown that cooperative computer based instruction facilitates procedural and content information giving while fostering a strong positive atmosphere (Meravech, Stern and Levita 1987; Meravech, Silver and Fine 1991; Feldman, Fish, Friend, and Bastone 1991).

Yet Johnson (62) mentions that beneficial interaction is not an automatic result of computer use but rather depends on the way language instructors "structure classroom interaction involving computer use." Johnson's observation was supported by Piper's (1986) study which posits that in spite of the organization of the class in smaller groups, the type of software selected by instructors has a substantial impact on verbal interaction within groups. Piper observed that the selection of software can counteract the benefits of a cooperative approach if the software is just a matter of structural manipulation. Indeed, Wyatt (1987) makes the distinction between instructional, facilitative, and collaborative software. The basic differences between the three types of software are explained as follows:

- Instructional software lacks flexibility in presenting material. Students essentially have to respond to predetermined learning paths. No decision making is involved on the part of students.
- Facilitative software essentially provides a fast access to databases (such as dictionary, grammar index, etc.) in order to facilitate language use. Such software does not provide objectives and students are entirely responsible for their learning.
- Collaborative software, however, is essentially explorative. Decision making is not only an individual activity, it also involves rich negotiations of meaning among partners when working in groups. Partners may, indeed, argue or disagree on decisions, approaches, and information. The prime focus of collaborative software is on function, communication, exploration, and discovery. Wyatt (91) also mentions that "in games and discovery activities, the student group discussions that precede each move at the computer are one of the most valuable aspects of the program."

Furthermore, Johnson and Johnson (1985) observed that 1) cooperative CAI gives students the opportunity to summarize and explain orally what they have learned, enhancing thus higher cognitive reasoning; 2) computers alone do not show problem solving strategies, whereas peers do; 3) computers only provide feedback while peers evaluate and praise the whole process of learning approach.

After consideration of these assets, cooperative CALL appears to be an ideal environment. Yet young males enter schools more computer literate than young females, and due to the socialization process favoring this trend (Collis 1985; Felter 1985; Yelloushan 1989; Levin and Gordon 1989), male displays of competitive attitude showed to have detrimental effects on females during cooperative computer based activities (Stables 1990; Culley 1988; Siann and Macleod 1986). As a result, females significantly learn more in same gender groups than in mixed gender groups (Underwood and McCaffrey 1990). Observations of interactions in mixed gender groups imparted that males compete for control of the computer keyboard, disadvantaging females during the learning process: a positive correlation was found between time spent on keyboard and the results on achievement tests (Dalton, 1990; Siann and Macleod 1986; Underwood and McCaffrey 1990; Webb 1985). Cummings (1985) saw females as more easily off task than males during computer based group activities because females showed to be more talkative. The author made it clear that silence is linked to the "appropriate" analytical skill required for computer tasks in spite of the fact that this was a language class.

However, other studies performed by MBTI psychologists (Myers-Briggs, and McCaulley 1992), outside the computer and foreign language realm, indicate that interpersonal relationships are made of other factors than gender differences, and a closer look at group dynamics reveals that gender constitutes a multifaceted variable for which personality differences, among other variables, are a strong construct. The MBTI personality test was originally designed according to Jung's psychological theory advocating that personality variation relied on orderly and systematic dynamics. These orderly dynamics are described across four different psychological traits, each trait defined in terms of dichotomies, as shown below (Barrett, Sorensen, and Hartung 1987, 1-2) :

Extroversion (E) or Introversion (I). This factor expresses a person's preferred attitude toward the world as well as a fundamental source of energy. Extroverts (E) are stimulated by people and things, whereas introverts (I) are stimulated by inner thoughts and reflections.

Sensing (S) or Intuition (N). This factor indicates the perception mode, how individuals take information. Sensing types learn best through the use of highly developed sight, sound, touch, smell, and taste. Intuitives use their sensory perception less and rely on imagination and hunches to guide information gathering.

Thinking (T) or Feeling (F). Decision making, according to Jung, occurs with either thinking or feeling. Thinkers prefer to use logic and analysis to decide, and feeling types prefer to use subjective values in arriving at decisions.

Judgment (J) or Perception (P). This is the lifestyle dimension. Judging types prefer an orderly lifestyle and get great satisfaction out of finishing things. Perceptive types are adaptable and are better able to succeed in unstructured situations.

Considering that previous researchers in foreign languages used the MBTI personality tests for various cognitive and psychological measures (Carrell and Monroe 1993; Ehrman 1994; Ehrman and Oxford 1988; Oxford 1990), the research project outlined below will examine gender differences in cooperative CALL while controlling for personality differences.

PRESENT STUDY

The purpose of this research is to investigate the issue of gender and personality differences in computer based foreign language group activities. To explore this topic, four research questions were set up: 1) Do males and females perform differently regardless of dyad types? 2) Do males and females perform differently in mixed vs. same gender dyads? 3) Is gender a stronger factor than personality in predicting language learning and interaction patterns? 4) Does keyboard control have an effect on language learning?

DESIGN

The experiment had sixty participants (30 females, 30 males), enrolled in intermediate French classes at the college level. All students retained for this study were considered traditional age students (19-25). Students were assigned to mixed or same gender dyads (10 female only dyads, 10 mixed gender dyads, 10 male only dyads). All dyads engaged in a French cooperative task using a collaborative software entitled **Where in the World is Carmen San Diego**, a mystery game. Pretest measures consisted of 1) the

MBTI personality profile test to control for personality differences, and 2) a software based pretest composed of two parts: a) French descriptive vocabulary pertaining to story characters in the software, and b) geography based vocabulary. A software based post test followed the computer treatment. The results of the post test were compared to the results of the pretest to gauge the instructional efficiency of the language software across genders, personalities and dyad types. **Carmen San Diego** is a computerized mystery game which involves: reading skills in French, making decisions, and manipulating computers. In addition to the experimental manipulation, a descriptive component was integrated into the design to examine interaction patterns by means of video analysis.

RESULTS

Gain scores indicated no significant difference in overall language learning between genders. However, further analysis of sub scores indicated that females outperformed males significantly ($p < .05$) in learning French vocabulary pertaining to descriptions of people. Likewise, males outperformed females in learning geographic French vocabulary. Differences between mixed and same gender dyads indicate that females acquiesce to male factual preferences in mixed gender dyads by learning more geographic vocabulary and lowering their scores in descriptive vocabulary pertaining to people.

Results from the MBTI personality test indicate that students tend to have gender specific personality profiles, "Intuition/Feeling" (NF) for females, "Sensing/Thinking" (ST) for males. The second preferred learning profile for both females and males of this study are Intuition and Thinking (NT), a combination of both male and female dominant traits. Personality profiles showed to be a stronger predictor of L2 learning at the computer than gender differences. We found that males and females had similar overall gain scores within each personality category, except for NFs (a case which will be examined in the discussion), and that NFs and NTs learned significantly more than ST students. The analysis of sub scores indicates that female NFs significantly ($p = .05$) learned more French vocabulary describing story characters in the software, and that male NFs significantly ($p = .06$) learned more geography based vocabulary. Clearly, in the case of NF students, gender was a stronger factor than personality.

Personality was also a stronger predictor on keyboard control than gender. No significant differences were found between genders regardless of dyad types. Results indicate that personality is the primary factor affecting keyboard control, with extroverts significantly ($p < .001$) controlling the keyboard more than introverts. However, when dyad types were included in the ANOVA computation, a significant differences ($p = .05$) was found between females in same and mixed gender dyads. Interestingly, females were more dominant in mixed gender groups and shared the keyboard more with a female partner.

Personality was also a stronger predictor of verbal interaction than gender. Results indicate that:

1. all students were on task;
2. non keyboard controllers compensate for the lack of keyboard control with "verbal control," except for EJs (Extrovert/Judging) who spoke significantly less when not controlling the keyboard;
3. there were no significant differences between Extroverts and Introverts, nor between males and females, verbal participation stemming primarily as a result of not controlling the keyboard.

Interestingly, keyboard control had a significant effect on language learning, yet not as expected: Non keyboard controllers learned significantly more ($p = .01$) than keyboard controllers. Considering that non keyboard controllers tend to compensate for the lack of keyboard control with "verbal control," I wondered if verbal output had an effect on language learning as well. However, none of the statistics computed showed a significant effect of verbal output on learning and correlation computations were not conclusive.

DISCUSSION

Males and females perform differently, yet not always as expected. The fact that females and males focus their attention on particular types of information (descriptive vocabulary for females, and geographical facts for males) is not really a novelty according to the schema theory which posits that females and males attend a text with gender specific schemata leading thus to various textual interpretations (Schweickart 1986, 1990; Crawford and Chaffin 1986; Scarcella and Oxford 1992). Yet this gender specific attention on different elements of a "com-

puter text" has strong implications for software design. Considering, indeed, that computers are particularly well suited to handling facts, our results suggest that content based CALL programs may suit males more whereas females may feel more comfortable when content is handled with a more personal touch, i.e. with story characters. Actually, other researchers went as far as to mention that some computer programs lend themselves to be sexist because of too many factual manipulations (Chisholm and Krishnakumar 1981). However, a language software like **Carmen San Diego** has given evidence that the inclusion of various types of information along with the software built in flexibility to explore this information, appeal to both males and females.

The fact that females acquiesce to male factual preferences in mixed gender groups is not a novelty either. This issue has already been often documented in gender studies explaining in detail how and why females adjust to male specific topics in mixed gender interactions (Steinem 1991, 1994; Tannen 1990, 1992, 1994). In all appearance the sociodiscursive style taking place in L1 among females transfers to L2. Hypothetically, considering that this study was conducted in a cooperative CALL environment, the presence of the computer may have reinforced this adjustment on the part of females. Indeed, research indicates that males "tend to hold more stereotyped attitudes about who is capable of using computers" (Levin and Gordon 1989, 69) thus ending up leading computer interactions. Yet, in this study, females showed to be more dominant in mixed gender groups by controlling the keyboard more with a male partner than with a female partner, which suggests that females were not at a disadvantage in mixed gender groups. In addition, video analysis indicates that males did not display aggressive nor competitive behaviors either verbally or with the keyboard. Rather than a detrimental effect, we observed a "shift effect" whereby females seemed to adopt an attitude traditionally and stereotypically seen as masculine. Clearly, the female college students of this study seemed to see mixed gender groups as a challenge.

Overall, the present data indicate that gender is not a simple construct and that personality is in many cases a stronger factor than gender. Interestingly, in the case of "Intuitive/Feeling" (NF) students, gender showed to be a stronger factor than personality. In spite of the fact that males and females were sharing the same personality traits defined as "people oriented" by the MBTI type theory, males did not focus their attention on story characters in the software like females. Rather, NF males attended the computer text like "Sensing" types, namely by focusing on detached facts. Let us not forget that the socialization process does not only affect females, it also affects males who are often trained to behave in fear of sounding like a female. With this in mind, the way males and females have been raised may have accounted for the gender differences we observed among "Intuitive/Feeling" students. As a child, being raised to acquiesce to what is traditionally seen as gender specific behaviors is probably as hard on NF males as it is on ST females.

In all evidence, the differences in gain scores between NF females and NF males demonstrates that gender can transcend personality, and that the socialization process leading to "appropriate gender roles" can certainly play as strong of a role in our foreign language courses as personalities. Furthermore, this study was based on a traditional view of gender differences. Such definition, as still often used today, only takes into consideration sex differences. A more modern definition accounts for not only sex differences but also for sexuality differences, a distinction that more recent gender studies are starting to make (Anderson 1993; West and Fenstermaker 1993). Indeed, this study did not account for hetero and homosexuality as possible extraneous variables.

Coming back to our data, the following will discuss why "Intuitive" (NF and NT) participants were better language learners than "Sensing" (SF and especially ST) participants. The analysis of verbal interactions indicates that "Intuitive" participants verbalized more easily what appeared to reflect skimming and scanning strategies, i.e. a rather quick extraction of keywords and information relevant to solving each game. "Intuitive" participants also showed to take more risks than "Sensing" students by checking verbalized hypotheses through immediate hypertextual follow-up maneuvers, especially in the case of "Intuitive/Perceptive" students known for their organizational flexibility according to the MBTI theory. "Intuitive" and "Perceptive" traits seemed to be an adequate combination of psychological constructs for efficient L2 "hypertextual reading" which lends itself to a nonlinearlinear format.

ST (Sensing/Thinking) students displayed more difficulties going beyond the word level and could easily express frustrations or show long periods of

silence when in front of unknown linguistic elements, especially for "Extrovert/Judging" (ESTJ) non keyboard controllers. ESTJs, according to the MBTI type theory, work best when they can plan their own actions, therefore likely to be either dominant when a situation lends itself to control or simply giving up when not in control. This may explain why EJ keyboard controllers verbalized significantly more than EJ non keyboard controllers who often displayed frustration or even stopped talking. Furthermore, the fact that ST students in this study verbalized what appears to be a linear and bottom-up approach vis-â-vis the hypertext, reluctant to use the browsing possibilities at will, they seemed to face a triple obstacle: 1) having to collaborate with a partner and running the risk to be out of control, 2) deciphering a foreign language text in a bottom-up way, thus wasting time; 3) reading a hypertext which lends itself to a nonlinear approach, lacking spontaneity in browsing techniques. All converge to say that "Sensing" students were at a clear disadvantage in this cooperative CALL activity

CONCLUSION

Whereas strategic interactive patterns could transpire for "Intuitive" and "Sensing" students respectively, gender differences did not seem to lend themselves to an easy profile of gender specific "hypertextual styles." The fact that in this study, females were essentially "Intuitive" participants, and that males were essentially "Sensing" participants, a quick analysis without consideration of personality differences could, indeed, indicate strong gender differences. However, our study brings evidence that gender differences constitute a multifaceted variable for which personality differences, among other variables, is a strong construct. Obviously, it is not enough to refer to gender specific schemata and gender specific learning strategies, and more research is needed to examine "personality specific" content and formal schemata for the reading of foreign language texts and hypertexts. We need to keep in mind, however, that in the case of NF students, both gender and personality specific schemata played a role in this study. Overall, video observations lead to the hypothesis that "book reading" could agree better with "Sensing/Judging" students, who seem to prefer a predetermined path in the way they approach a reading task, while "hypertextual reading" seems to fit "Intuitive/Perceptive" students who rely on flexible and nonlinear reading strategies. This hypothesis remains of course to be tested, using the present observations as a starting point for future studies.

Overall, this experiment clearly indicates that collaborative CALL activities initiate ample spontaneous exchanges, that students remain on task, and that such activities generate a positive atmosphere. However, particular attention must be paid to linear learners like "Sensing" types who are more likely to find such experiences frustrating and obviously need training in foreign language "hypertextual reading." Likewise, a language software should fit as many personality types — including genders — as possible, taking into consideration the multiple learning strategies of our students. Software designers should make it a point to integrate more than one path of data exploration, e.g. hypertexts, along with a large diversity of data.

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From "Oh, Wow!" to "Here's How...": What Now with Instructional Technology?

Renée Meyer, Emery Tetrault, and Alan Stewart, Department of Defense

ABSTRACT

At least once in our professional lives, each of us has been impressed and excited by an attractive, intelligently written CALL demo. The process of translating that excited impression into actual learning has been like entering a dark wood, and eventually we all come to the sign that says "Abandon Hope, All Ye Who Enter Here." Computer based training (CBT) development is tough.

The difficult nature of CBT development derives from many factors: the computer medium itself (e.g. computerphobia, fonts, compatibility, cost); the authoring system (e.g. restrictive templates, clumsy interfaces, lack of flexibility); the nature of conventional CBT (e.g. steep learning curve, methodological differences, extensive lesson planning); and the management of CBT development (ignorance of software development principles, vastly increased time investment, lack of planning, poor distribution of effort).

One of the biggest problems in CBT development, however, is what might be called the Pirandello Syndrome — "Six Acronyms in Search of an Author." The decision to "do more CBT" (computer assisted language learning [CALL], computer assisted language instruction [CALI], computer based language training [CBLT], computer assisted instruction [CAI]) which often drives the development and implementation of CBT, may or may not be the indicated solution. If it is, then a pragmatic "lessons learned" approach to development can yield results; if not, then informational technology may be an appropriate tool instead.

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WRITING (HYPERMEDIA) TO READ

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INTRODUCTION

Much has been written about cooperative learning and learner centered classrooms over the past ten years. In all this literature, there are, however, few articles that provide specific models for classroom integration in foreign languages. Even less exists where it concerns the conjunction of cooperative learning and new technologies.[1] This paper offers a narrative of some attempts to integrate the two in order to address systemic curricular problems at the university level. It may be that some of the tactics are applicable to the secondary level. *Caveat lector*: what follows is not entirely a model of success, for failures, too, have their lessons.

One of the more difficult courses to teach in the Department of Foreign Languages at Virginia Commonwealth University is 202, a fourth semester reading course that, for most students, concludes a two year language requirement. In addition to passive student resistance, if not overt antagonism, there is a problem of highly divergent competencies. The problem is systemic, aggravated by two factors: first, the department is bound to accept comparably numbered courses from other colleges no matter how incommensurate the two curricula may be, and second, our urban student population includes adult and non-traditional learners who often have lengthy hiatuses between first and second year language learning. The student attitude toward the course is complicated by a false notion that the reading course will be far easier than the other fourth semester offering, a conversation course (205). Many students quite erroneously believe that in a reading course, grammar, syntax, vocabulary, and the other "drudgeries" of second language acquisition are moot: they expect to pick up texts and read in what I would call a "transparent" mode. This ill mix of systemic problems and student attitudes results all too frequently in a student's last relationship to language learning being a decidedly distasteful one: certainly not the stuff that fosters lifelong, globalizing learning.

The first time I taught the course — in a six week summer course, before colleagues had a chance to "school" me — I began with an optimistic syllabus. I had planned to hypostasize the act of reading in a French way. I imagined that this would be a thoughtful capstone to a two year course of study and a point of entry into continued interest and explorations of the language. The texts were to include a wide variety of discourses, from poetry and literary narrative to advertising, commercials, sitcoms, and films. The framework would consist of Francophone approaches to reading, for example *explication de texte*, Canadian and Moroccan elementary and high school *manuels*, and certain theoretical approaches (Todorov, Genette, Barthes). The student reaction to my prelude was anything but "optimistic." We negotiated and I relented (but not after several forays). We still read many of the texts, but with less, much less, consideration of French reading practices and no overt theorization of the act of reading.

The next semester (Fall 1994), I tried again. This time, however, I mustered the forces of technology. No longer a summer offering, the course followed the traditional textbook and syllabus. I decided upon a chapter from Todorov's *La lecture comme construction* to provide the theoretical underpinning to our readings.[2] We read it in conjunction with texts in *Explorations*, a standard second year reader. The Todorov text was proving very difficult for the students so I converted it into an **Annotext** document.[3] The difficulty apparently was not one of reading in a foreign language, but rather of a foreign conceptualization of reading practices and the rigours of theory. The first test was a rout. Over half the students failed the exam, a series of essay questions on the *Explorations* readings in light of Todorov's approach. And, even though I gave every student a chance to discuss the exam questions with me (n.b., each question had been discussed in class more than once) and rewrite the answers, few were able to think theoretically in such a fashion. Moreover the ability to communicate in French, for over seventy percent of the class, was, to dulcify it in a foreign tongue, *lamentable*. I even allowed rewrites of the entire exam and this proved as disheartening as the first set.

We had a heart-to-heart talk. To a person the students expressed their disgruntlement with the language requirement and their frustration at "wasting" four semesters only to be incapable of listening, speaking, writing, even reading in another language with any degree of communicability. Many claimed to be spending two to three hours per page on the assignments in *Explorations* and *still* not understanding. All but two were thoroughly exasperated. We agreed to try reading using **HyperReading** stacks ("Garçon un bock" and "La Parure") and a variety of Transparent Language texts (*Les Fables* by La Fontaine and some poetry by Baudelaire).

Since the reading help is on-line, I spent little time working through vocabulary and structural prereading work. I did, however, reinforce vocabulary and structures in discussions and postreading activities. As I reflect on the experience, I think that pre-reading is still an important learning tool and should be part of classroom activities. I also found that the lab setting was not conducive to oral discussions of the work, especially not in French. What would have been a strong, in class activity would have been small group exchanges on Daedalus or some other on-line discussion. At the time, I had not learned to use Daedalus well enough to engage it for a class.

After a week of "hyperreading," the students were much more involved in the class discussions. They also felt empowered to tell me that they would like a different assortment of readings.[4] After going through what was available in our Language Learning Center, we concluded that what they would like to read would have to be created. The very idea of working to produce something that they could share with each other, furthermore a legacy for those who would follow them into the "horrors" of FRE 202, gave the students an impetus the likes of which I have not seen in twenty years of teaching. Another impetus was that they would be learning how to write for the Twenty-first Century. The "real world" learning that hypertext creation offered them piqued their interest greatly.

I put them into cooperative work groups. Each group decided on the text or texts they would convert into hypertextual documents. They also had to choose the types of ancillary materials to supplement the text and to enrich the reader's ability to decode it. I had already been using cooperative group work in the class prior to the projects so the students were accustomed to task definition, distribution of work, and self monitoring.[5] They quickly set to work. Other than scheduling problems (most of our students are commuters and most work at least one job, if not two or more, off campus), there seemed to be few problems in the groups. One group had to chastise a member for not showing up, especially since she had the documents they needed on more than one occasion. One of the benefits of cooperative groups is that the monitoring is done at peer level which tends to have far more impact than professorial "disciplining and punishing." They also seemed to be more respectful of each others' time: their conversations about work and school loads, I will assume, lead them to empathize with their colleagues' time constraints.

The model we were using for our hypertexts came from a German World Wide Web hypertext developed at V.C.U. by Robert Godwin-Jones (http://www.fln.vcu.edu/faculty/gj.html). His hypertext includes a text with clickable vocabulary, televisuals, audio recordings of the text, and pictures. Most students chose to add a clickable dictionary, some contextualizing information, and pictures to their choice of readings. One chose to add in video clips and one group worked with video commercials as the base texts. Below is a list of their projects.

- *Babar* — the full text with clickable images and a French-English glossary. We attempted to download a cartoon, but it was taking too much memory. I've added some audio segments in response to their critique of the finished materials.

- Baudelaire — "Les Phares" with corresponding images from the Masters like Rubens, Michelangelo, etc. Vocabulary is glossed and the artists have biographies. His work is almost entirely in French, including the vocabulary.

- Poems by Eluard and Lamartine and a song by Bucolo. These students went all out providing contextual materials like biographies of the authors and information on the times. They also wrote their own interpretations of texts. The poetry is glossed and they put in pictures that set a tone for the readings. The song was digitized and can be played.

- *Cyrano de Bergerac* — a scene form Rostand's play in which Cyrano berates the Vicomte for not adequately nor eloquently attacking his nose. The student prepared the reading by giving information on the play and contextualizing the scene. Given the linguistic difficulty and poetic nature of the scene, she choose to give phrase translations rather than

glossing vocabulary. She also cited explanatory footnotes from a critical edition of *Cyrano de Bergerac* for the more difficult literary passages. And finally, she included clips from the recent movie. She would like to have the entire text included rather than just a lexemic reading. She would also like the audio portion, without video, made available.

· *Au Clair de la lune* — although this student started slowly, wanting to change projects the last day of class, I urged her to collect her materials and persevere. Hers was the only incomplete I had to give. She finished up in the very beginning of the next semester. She never found the anthropological information on the song that she had hoped to include, but she did follow up on the reference to Harlequin. This led her to include a link to Raymond Queneau and a children's book.

· Fables — this student took a different tack: some of the student's texts were in English and she gave translations into French. Hers became even more exciting when we linked other Web sites housing French fables.

· French Commercials — the students chose commercials with English subtitling after having viewed some without subtitles because they did not feel able to transcribe the French. Their hypertext is more a comparison of French and American advertising using the actual ads as examples.

· Paris Match: La violence en Irlande — the student's interest in the Emerald Isle led him to seek a current event on the "troubles." He was the least dependent student: figuring out how to do everything on his own or with little help from me.

· Paris Match: Les vedettes — as a history major, this student wanted to look at a "People"like the French view of celebrities. Although the "celebrities" are Hollywood types at times (Frank Sinatra, Sigourney Weaver), she still felt that the "French" flavor came through. She provided a glossary and scanned in all the images.)

The largest problem I had to face was logistical in that the department did not yet have adequate projection hardware: since I had not prepared my syllabus to include training on how to create hypertexts, I had to work more or less individually with each group. Some groups wanted to learn to scan images or text or both, some to digitize videos, some to include audio; all had to learn how to input their texts and dictionaries and eventually convert the texts (saved in RTF format) into HTML format. (RTF, or Rich Text Format, is a format that all machines can read despite formatting codes and special characters; HTML is the **HyperText** Mark-up Language which allows various platforms — IBM, Macintosh, UNIX — to handle texts on the World Wide Web otherwise knows as The Web, the WWW or W³). They found out how to use Système D if they wanted, although most opted to use MS-Word and eventually the French Spell Checker. At that time we did not have equipment in our Language Learning Center to engage in class demonstrations of the other software and hardware. The lab does not and doesn't really need those for scanning and digitizing images and full motion video. Students were are at widely varying stages of their projects from the moment of inception to the very end and not all chose the same elements. All of this contributed to a logistical nightmare and serious delays.

I had to do most of the scripting and text conversion since the learners did not have enough familiarity with the procedures. Furthermore, the point of the class was not to inculcate technowizardry, but rather to improve their ability to read and think about reading in French. Also there were not enough scanners and video digitizers at our disposal on campus which meant I had to do a great deal of the work outside of class time. We set up schedules but, inevitably, systems would crash or hang-up and always a simple operation would take five times longer than expected. They all did learn, nonetheless, the very basics of the process of the hypertexting, that is, interconnecting a text with other related types and bits of information. One student was already engaged in 'Net surfing and digitizing. In addition to converting his own texts and those of his group and doing most of his own scanning, this student acquainted me with a superb HTML editor, SuperText. He eventually began to help other groups with various operations. Another learner whose language abilities were quite strong, also wanted to learn to do his own scanning. He spent many hours getting good scans of the art works that correspond to Baudelaire's poem, "Les Phares." His problem became one of pecking orders: he kept getting bumped off the faculty machines by faculty. One of the women in the class took a keen interest in the entire process and tapped the expertise of her father and brother, both "techies." At home in the evening they would help her produce parts of her group's hypertext on *Babar* (though we ran into another problem of IBM vs. Mac incompatibility). On the last day she asked if the department didn't have other classes like this where she could continue to learn

French and writing with new technologies: this from one of the most recalcitrant students at the beginning of the course.

Needless to say, the experience would have been better if it had been planned from the beginning. If I could have taught the group what I know about various technologies and software and if there had been more access to necessary technology there would have been a lot less wear and tear on me and more learning for the students. Still, they did learn some of the vocabulary of the new technologies in French. Moreover they learned practically what I had been trying to instill theoretically.

For the final class, the students were to have read each others' works (those not in their cooperative group) and to be ready to critique each other. Some students had finished their projects on time and thus had a product to be critiqued. Others finished up just in time for the final class and so their work was not ready. Still, those students who had read others' works (around two-thirds of the class) soundly critiqued their and their colleagues' works: which means they read an enormous number of texts during the last two weeks of the semester. They undertook this reading quite willingly. They gave suggestions for making the texts more "reader-friendly."

Although they were not handling the texts in an explicitly theoretical manner, they were hypostatizing the act of reading, albeit "hyperreading." And, however much I would have liked them to articulate what they were doing more "theoretically", their praxis clearly demonstrated an understanding of reading processes. This experience has given me pause to reconsider my proclivity toward analytical-critical discourses at least with regard to certain types of learning for the Twenty-First Century.

NOTES

1. A few articles where group work in conjunction with computers is discussed are: Wm. Flint Smith, Alice Slaton, Heather Rendall, and A. Piper.
2. *Les Genres du discours* (1978). Paris: Seuil, 86-98.
3. **Annotext** is a hypertext authoring and reading program designed by Otmar Foelsche at Dartmouth. It allows one to input a text and then connect multiple reading aids to the basic text. These aids may include glossaries, dictionaries, audio, visual, and audiovisual files (like **QuickTime** Movies).
4. Landow, Slatin, and others have remarked on this "empowerment" when students take responsibility for their own learning.
5. The Johnson brothers at the University of Minnesota have numerous works and "starter-kits" for cooperative learning.

SUGGESTED READING

Computer Group Work:

Piper, A. (1986). "Conversation and the Computer: A Study of the Conversational Spin-off Generated Among Learners of English as a Foreign Language Working in Groups." *System* 14, 2 .

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Slaton, A. (1989) "Interactions Audio-Visuelles, Videodisc and Hypercard for Students of French at Ventura College," *CALICO Journal* September, 51-70.

Smith, W. Flint, ed., (1991). *Modern Technology in Foreign Language Education: Applications and Projects*. Lincolnwood: ACTFL National Textbook Co.

Empowerment:

Landow, George P. (1992). *HyperText: The Convergence of Contemporary Critical Theory and Technology*. Baltimore: The Johns Hopkins U. Press.

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PRESENTER'S BIODATA

Kathryn Murphy-Judy, Ph.D., is currently an Assistant Professor at Virginia Commonwealth University. She is continuing development of hypermedia reading materials on the French Stockmarket and on an electronic archive of advertising materials for multidisciplinary use (her emphasis on French language and culture instruction).

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THE DEVELOPMENT OF COMPUTER BASED ADAPTIVE TESTS OF LANGUAGE PROFICIENCY

JOSÉ NOIJONS, CITO — THE NETHERLANDS

ABSTRACT

The Dutch National Institute for Educational Measurement (CITO) itembanks in the field of language proficiency can be used for the construction of computer based adaptive language tests.

The computer based adaptive approach allows for the automatic construction of tests making use of the itembanks mentioned above. The algorithms used in such automated testing lead to a sizeable reduction of costs (time, staff). Correction and scoring being automated, the immediate availability of test results enhances user friendliness and lowers the costs per candidate.

The system will have two components of which the first is for internal use only.

- A system that allows for the selection of itempools from interrelated scaled itembanks to be used for various target groups and for various applications; the system will be used for the production of content in computer adaptive tests.
- Computer based adaptive tests to be filled with content according to user specifications.

In my talk, I shall outline the system mentioned above and I shall show a demo version of a computer based adaptive language test that is used

- to determine the proficiency level of English at the entry of students to the university level;
- to evaluate progress during the first semester.

I shall point at some of the constraints in computer adaptive language testing (CALT) especially at the higher levels.

PRESENTER'S BIODATA

José Noijons is a staff member in the languages department of CITO, the Dutch National Institute for Educational Measurement. He has been involved in the development of all types of language tests. His current work in CALL is in the development of computer adaptive tests of listening and reading and in electronic item banking. His most recent publication appears in *CALICO Journal*.

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GAUGING THE EFFECTIVENESS OF MULTIMEDIA

JAMES PUSACK AND SUE OTTO, UNIVERSITY OF IOWA

ABSTRACT

As our standards for high quality CALL materials increase in parallel to increased technological capabilities of the hardware, the issue of cost effectiveness rears its ever ugly head. Multimedia exacerbates this concern, not only because the required workstations are costly, but also because the investment in faculty/staff development time and copyright cleared media becomes enormous. This paper deals with issues related to various evaluation measures that have been implemented in a French/German project aimed at enhancing the teaching of listening comprehension and culture via authentic television materials. The complex interaction environment needed to support learning via such authentic materials — that is, the very justification for using multimedia in the first place — greatly complicates the evaluation process, as does our goal of teaching not discrete point facts but deeper cultural insights.

The focus is techniques for collecting base-line data and evaluating student use of the software. The greatest challenge has been to go beyond simple surveys that measure user satisfaction without falling prey to a naive belief that control studies will conclusively demonstrate miraculous changes in a heterogeneous population of language learners over just a few weeks' time. The solution has been to collect base-line data on our students' knowledge of the target culture and to perform long term evaluation that may extend over several semesters. At the same time, we are evaluating our software using selective data collection and engaging in more labor intensive measures such as taping student sessions, conducting recall protocols, observing class sessions, and directly measuring learning outcomes.

The session will lead off with a brief demonstration of the multimedia materials under study and then turn to a discussion the specific techniques we are using to conduct this kind of assessment. Preliminary results of this evaluation effort will also be revealed.

PRESENTERS' BIODATA

James Pusack is Associate Professor of German at the University of Iowa. He is co-author of a book and numerous articles on CALL.

Sue Otto is Director of the Language Media Center and Adjunct Associate Professor of Spanish at the University of Iowa and has likewise contributed many articles and workshops on CALL. She is president elect of CALICO.

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COMPUTER ASSISTED LANGUAGE MULTIMEDIA (CALM): SECOND LANGUAGE SOFTWARE FOR LEARNING AND TEACHING

GAIL ROBINSON-STUART AND BOB HOFFMAN, SAN DIEGO STATE UNIVERSITY

ABSTRACT

In response to the need for accessible tools for the integration of technology into language curricula, LARC is developing authoring software with the needs and concerns of language educators in mind: Computer Assisted Language Multimedia (**CALM**). **CALM** developers, Gail Robinson-Stuart and Bob Hoffman, have paid particular attention the educator–software interface. Educators visiting LARC's Multimedia Demonstration Lab have complained that authoring systems generally require more time to learn than they have and more programming knowledge than they want. Trainers of teachers have expressed concern about the difficulty in integrating sound language pedagogy with higher technology. LARC's **CALM** addresses these issues. In addition, the sociological perspective of language as part of culture is addressed by the incorporation of culture components in relation to activities for practicing the four language skills.

CALM provides educators with a straightforward authoring program for integrating their content and teaching materials (laserdisc, video, graphics, CD audio, digitized audio, text) into multimedia activities which correspond to their courses' curricula. The learning curve, depending upon computing experience, is projected at four to eight hours. **CALM** is designed so that faculty can easily assign teachers-in-training, graduate assistants, teaching assistants, and even advanced students to develop materials. **CALM** is unique in that each activity selected by the educator (or student) has available on-line information on the pedagogical issues surrounding the use of the activity, along with on screen authoring instructions.

PRESENTERS' BIODATA

Dr. Gail Robinson-Stuart (Ph.D., Stanford) is Director, Language Acquistion Resource Center, San Diego State University, which is one of America's six national Language Resource Centers. She is also Professor of Spanish and Linguistics. Professor Robinson is particularly interested in the application of multimedia to language pedagogy and culture learning. She oversees the design of numerous multimedia projects including multimedia authoring systems, video based speaking tests, and specific multimedia courseware for European and Oriental language.

Bob Hoffman is Multimedia Designer for the SDSU Language Acquisition Resource Center and an instructor in the SDSU Educational Technology masters degree program, of which he is a graduate. He helped develop LARC's **Pair-a-Phrase** authoring system, and the Video Oral Communication Instrument (**VOCI**), as well as consulting with other second language project developers. Bob has also designed and developed instructional software for the Centers for Disease Control and the SDSU Center for Research in Math and Science Education. He is currently working on a doctorate in Educational Technology at SDSU and The Claremont Graduate School.

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STUDENT DEVELOPED HYPERCARD INSTRUCTIONAL MATERIALS FOR NAVAJO, JAPANESE, AND SPANISH

KAREN SCHAIRER, EVANGELINE PARSONS YAZZIE, LOUISE K. YAZZIE, DARRICK FRANKLIN, ROSELYN THOMPSON, AND DAWN WHEELER, NORTHERN ARIZONA UNIVERSITY

ABSTRACT

In a student centered approach to curriculum development, Navajo, Japanese, and Spanish students produce hypermedia programs in and for their respective languages. Navajo students, studying reading and writing in their own language, develop programs to make the Navajo curriculum more responsive to cultural and educational needs. Northern Arizona University (NAU) students of Japanese, with university students in Japan, develop bilingual **HyperCard** audio and text stacks of student writings about themselves and their surroundings. Spanish student teachers develop multimedia stacks for vocabulary building, reading, and introductory linguistics. Computer fears dissolve and motivation levels increase as students discover the satisfaction of producing **HyperCard** programs of real life validity.

INTRODUCTION

HyperCard and multimedia programs provide laboratories within which students perform physical manipulations of otherwise abstract information. To be effective, however, proficiency oriented computer programs must be interactive, do more than simply drill paradigms, and must motivate the learner beyond the simple expedient of earning a good grade (Donaldson 1994, 55).

HyperCard becomes interactive on an entirely new level when students design and produce their own programs. Student learning becomes the result of exploration and experience as their projects approximate real world activities. Designing language learning stacks leads students to think about the relationships between units of information and ways to integrate then. This paper reports on instructor student collaborations in the preparation of language learning materials, and an attempt to create more meaningful, successful, and appealing **HyperCard** based curriculum.

In a student centered approach to curriculum development at NAU, Navajo, Japanese, and Spanish students produced hypermedia programs in and for their respective languages.

Navajo students, studying reading and writing in their own language, developed programs ranging from phonics for beginners to exercises in values and decision making for intermediate language learners. The program goal was to make the Navajo curriculum more responsive to cultural and educational needs. Students of Japanese, in partnership with university students in Japan, developed bilingual **HyperCard** audio and text stacks of student writings about themselves and their surroundings. Spanish linguistics students created multimedia stacks to enhance comprehension of authentic spoken Spanish.

Independent of the diverse project goals, each language offered distinct challenges, particularly Navajo and Japanese that required learning new keyboards.

THE NAVAJO PROJECT

The Navajo language program at NAU provides a minor in Navajo and offers a certification program in Translation and Interpretation. The program enhances the career possibilities of Native American students who are already proficient in speaking and writing both languages and are interested in working as professionals in bilingual bicultural settings.

The driving force behind the program is the preservation of the beauty of the Navajo language and culture while incorporating new expressions necessary for communication in today's society. As one means of accomplishing this, the Navajo Translation and Interpretation Program is developing the Navajo **HyperCard** program to provide a comprehensive and expandable information bank.

Navajo students at NAU play an integral part in the organization of the data, providing up to date information to and about their communities. In the process of perfecting translation skills, they develop new technical glossaries of practical use, both for future students and the community as a whole. These student projects, through their incorporation into the Navajo **HyperCard** program, become meaningful contributions to bilingual communication. Users may access growing glossaries of medical terms, legal terms, and other specialized vocabulary generated through the **NAU Navajo Language Program** (Figure 1). The Translation and Interpretation Program enables students to provide services which promote equality for monolingual Navajo speakers and encourages ties between the communities across the Navajo Nation, as well as with its neighbors, native and non native.

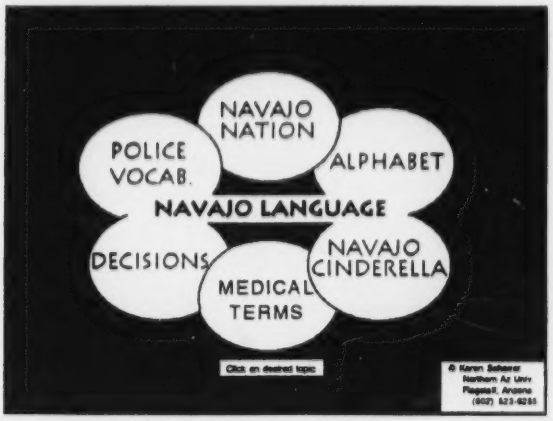

Figure 1.

The initial step was the development of an interactive map of the Navajo Nation with clearly defined boundaries of each local chapter, or political unit (Figure 2). Buttons lead from the main map to individual chapters, guiding the user through the constantly expanding information base. The first cards developed contain critical but not always easily accessible information about civic leaders, local institutions, services, schools, and demographics.

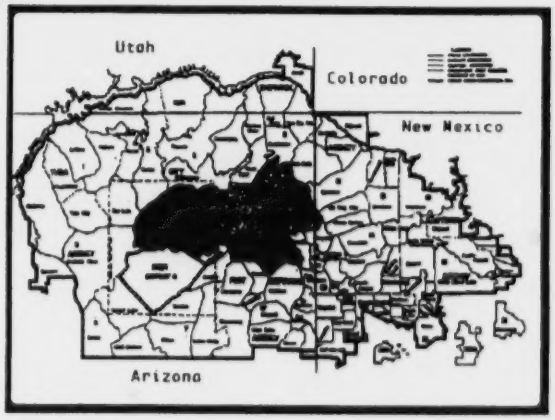

Figure 2.

From these simple but very practical beginnings, the program is expanding in many directions. Experience with **HyperCard** has lead to the anticipation of the use of technology to bring together educational sites across the Navajo Nation. **HyperCard** projects, both instructors and students stated, multiply the possibilities of bringing the realities of the Navajo perspectives into a more visual format.

Profession specific programs have been developed by fifth semester Navajo students minoring in Navajo and earning their degrees in teaching or in criminal justice. One criminal justice major incorporated a bilingual Navajo English **HyperCard** glossary of police vocabulary with a lesson concerning actions and their consequences. Another combined a vocabulary lesson focused on words expressing emotion with a lesson on how decisions affect one's emotions. In this program a young man falls in love and, determined to make a good impression, steals something for his girlfriend. Love and happiness are replaced by anger, embarrassment, and sorrow. These stacks present target words and phrases with appropriate pictures, audio buttons for pronunciation, complete Navajo sentences for context, and English translations (Figure 3).

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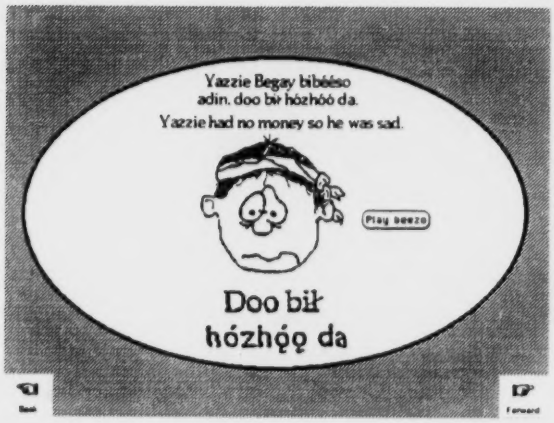

Figure 3.

A stack created by a Navajo elementary education major introduced beginning language students to the sound system of the Navajo language (Figure 4). This **HyperCard** stack benefits students of any age who wish to practice the fundamental sounds of the Navajo language in various contexts.

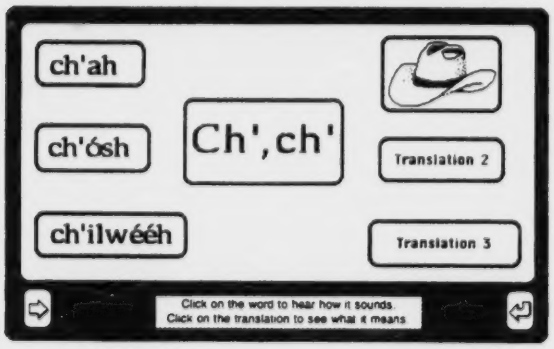

Figure 4.

The Navajo student who developed this program stated that he was excited about it from the beginning because he had never seen a Navajo computer program before, and liked the idea of creating one of the first available. He designed the program to appeal to his future Navajo students, and the first card is an original drawing of the magnificent view from his front door (Figure 5). Having had some experience with elementary school students, however, he also incorporated into his stack the image of a spaceship control panel to capture their attention.

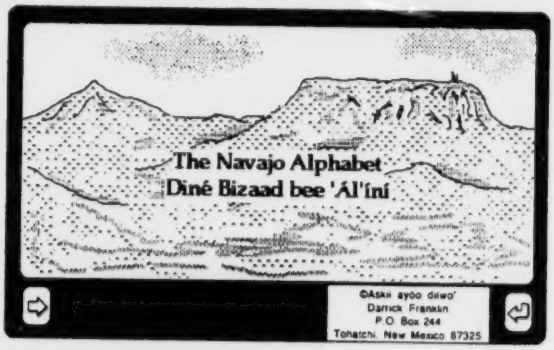

Figure 5.

The audio recording was both the most fun and the most challenging aspect of stack development, he explained, because it is so important to get the right sound for every letter and word. "It is a curious sensation to hear Navajo being spoken by a machine, since we're used to hearing Navajo from a person."

For each of these programs, the Navajo students produced bilingual instructions, texts, artwork, and buttons for pronunciation, addressing at all levels the need for culturally relevant curriculum designed with the user in mind.

Perhaps the most exciting effect of teaching students to work within **HyperCard** was the creativity of the projects inspired by the program's capabilities. Once the potential of **HyperCard** was realized through creation of simple programs, students envisioned broader, more creative applications. The ideas generated ranged from documentation of collection, storage, and use of native plants to documentaries of events affecting the Navajo Nation, such as the Inaugural Address of the newly elected President. Some students are now beginning to capture on film traditional stories, technologies, and cultural activities, to expand meaningful cultural components within the Navajo **HyperCard** program.

THE JAPANESE PROJECT

Japanese is offered for four semesters at NAU. The **HyperCard** program developed by fourth semester Japanese students responded to these students' unique needs and goals. Geographically isolated from significant communities of native speakers of Japanese, these students developed a stack through which they could practice their developing skills in

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real life communication. The project involved the two way creation of authentic materials through an exchange between students of Japanese from NAU and students of English in Japan.

Using a personalized format, students shared not only oral and written essays in both their native and second languages, but also photographs, handwriting, and personal art samples. Students communicated with their program counterparts both in the language they were learning and in their native language. The tone of the material was often personal, topics were selected with a peer audience in mind, and the risk of communicating with native speakers in their limited second language was offset by the knowledge that their native language skills were appreciated.

Similar to traditional pen pals in some ways, the **HyperCard** stacks differ in that they are cumulative and accessible to all participants. These bilingual stack exchanges have been merges to form an expanding data bank of authentic language materials written for and by students. For students in Flagstaff, AZ, the communicative potential of Japanese has changed from theoretical and remote to practical and immediate. In some cases, the exchange of e-mail addresses lead to spontaneous Japanese-English exchanges unrelated to classroom requirements.

THE SPANISH PROJECT

The problem to be solved by students of Spanish linguistics through **HyperCard** was to convert abstract theory into a practical, meaningful tool. Spanish learners at NAU have access to native speakers from many nations, each of whom speaks Spanish with a particular regional flavor. The assignment was to apply Spanish linguistic theory to analysis of the variations found within authentic native Spanish.

The resultant **HyperCard** program, **Arcoiris Oral** (Oral Rainbow), is currently available to students within the Spanish section at NAU It is a series of eleven computerized video segments which provide practice in listening comprehension, exposing students to short segments of some of the principal Spanish dialects. These video clips are accompanied by student designed suggestions and helps. Audio buttons encourage students to repeat specific phrases as if they were from the region in question, comparing their pronunciation with that of the native speaker (Figure 6).

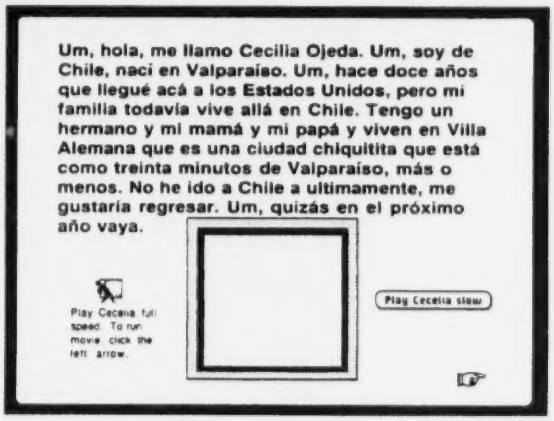
Um, hola, me llamo Cecilia Ojeda. Um, soy de Chile, nací en Valparaíso. Um, hace doce años que llegué acá a los Estados Unidos, pero mi familia todavía vive allá en Chile. Tengo un hermano y mi mamá y mi papá y viven en Villa Alemana que es una ciudad chiquitita que está como treinta minutos de Valparaíso, más o menos. No he ido a Chile a ultimamente, me gustaría regresar. Um, quizás en el próximo año vaya.
Play Cecelia full speed. To run movie, click the left arrow.
Play Cecelia slow

Figure 6.

Arcoiris Oral was produced during the second half of the semester in Introduction to Spanish Linguistics, a third year Spanish course. Each of the eleven students in the class was assigned to capture a short video of regional Spanish speech, thirty seconds to two minutes in length, and make a transcription using standard orthography. The next step was to select approximately thirty seconds of the video in which the regional flavor of the speech was evident. Students made phonological transcriptions of this material and exchanged copies of the audio tape and transcription with two other class members for revision. During this collaborative period, the video segments were edited and digitized by the professor.

Students designed their own **HyperCard** stacks, copied their transcriptions, and wrote explanations of the various linguistic phenomena they observed using Macintosh SE's. They were encouraged to keep other Spanish students in mind as they worked. How could they explain their observations to someone less experienced than they? What problems had they originally experienced when trying to understand the native speakers? What suggestions could they offer to others listening for the first time?

The hands on design of **HyperCard** stacks and input of data created additional collaborative possibilities because all were interested in seeing what their classmates were creating. Backups were made of all stacks to allow students access to each other's programs without worry of inadvertent damage. Though students were often inspired by other's works in progress, individual programs remained unique to the students creating them.

Throughout the project, students were required to keep a process journal describing challenges and solutions, plans and reality, and how they would approach the project if they were to do it again. Initial written comments almost invariably expressed nervousness about the project and reported problems, technical (trying to record without film) and human (the informant didn't show up). Computer experience among class members was limited to word processing, and the thought of developing a multimedia program was stressful to some. Initial fears, once expressed, seemed to fade, replaced by observations concerning their experiences. Students began to take the initiative as the project became theirs. One student wrote, "I heard a strange combination in María's speech and went to verify it, talking to her in person, and listening for her to use it." Though at first the transcription of thirty seconds of native speech seemed overwhelming, as they got involved with their samples, they began to wish they could use more of what their informants said. "It's all so interesting."

Although projects were individual, collaboration was encouraged, particularly during the phonetic transcription phase. Some students stated that they were nervous about doing the phonetic transcription, because they didn't understand it well from the book, "even after reading the chapter again with a dictionary." Appreciation for the chance to collaborate was expressed twice, first when they received help from classmates on hard to understand segments and second, when they discovered that others were also having comprehension problems. "I also felt a lot better when she told me she thought that my informant was a difficult one." Peer editing was praised because it gave more practice, revealed items that had been missed, provided new insights, and generally raised their self confidence. One student reported exuberantly: "It seems that at last I understand the mystery of phonetic transcriptions."

The word "fun" first began to appear as they mentioned "their students." "Making the comments was fun. I pretended like I was talking to my student and explained how to understand the text." "Since this was going to be used for future Spanish students, I had fun with it." Thinking about specific students lead them to chose and then elaborate on certain linguistic features. "I discovered things about my recording that I hadn't known before as I tried to think about what was interesting so I could explain it to my students" (Figure 7).

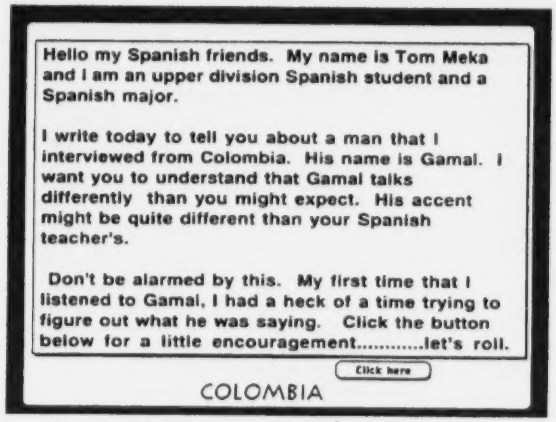
Hello my Spanish friends. My name is Tom Meka and I am an upper division Spanish student and a Spanish major.
I write today to tell you about a man that I interviewed from Colombia. His name is Gamal. I want you to understand that Gamal talks differently than you might expect. His accent might be quite different than your Spanish teacher's.
Don't be alarmed by this. My first time that I listened to Gamal, I had a heck of a time trying to figure out what he was saying. Click the button below for a little encouragement.....let's roll.
Click here
COLOMBIA

Figure 7.

After entering their initial ideas on the small computer, students transferred their projects to a Quadra 840 AV, and some experienced a second phase of computer fright. "I worked a little while, but Dr. Schairer had to take off and I was afraid to take over completely yet. I need to be more daring." "I was kind of scared at first because what the professor did was show me a few examples of how to do it, watched me do it, then she left. Everything turned out great. I was able to find specific examples and record them. It was a great experience."

Sound editing and development of student activities, considered the final phase of the project, turned out to be just the beginning. Once students gained access to the Quadra, their projects began to take on additional dimensions. They came up with new ideas as they began to manipulate sounds. The students reached a discovery phase, and suddenly time flew. "I was working for almost two hours, but time went so fast! I really got involved in this project towards the end." The journals were dotted with "wow's" and "amazing," as they developed insights into the relationship between what they had been reading and what they could now "experience" by means of the computer. "Amazing... what I thought were 'new words' is a series of 'easy words.'"

The audio record and edit functions of **HyperCard** proved easy for the students to master, and suddenly concepts which had merely been hurdles to overcome for an exam became real. "It's as if I actually know a little about linguistics," one student reported. Terms from the text began to appear in their journals. "I could tell there would be plenty of examples of *sinalefa, hiato,* and diphthongation." "I actually discovered something," reported another. "No matter

how I try to divide them, she just runs her sounds together." "Another thing that I realized. He jumbles his ideas, starting to say one thing and then saying another. This was interesting because it's something that I do all the time."

Students applied their discoveries not only to the computer project but to comprehension of their own language acquisition as well. "After trading transcriptions with classmates, I learned something interesting. When there was a word that was hard to understand, if I would first tell the other student what I thought it said, they would hear the same thing as me, but if I would just let them listen, then they would hear their own version. It's strange to see how our minds work. I think that's why I personally have trouble sometimes understanding native speakers. I get something in my head about what they're saying and I don't let my mind work because I'm already convinced that I know the word."

The semester came to a close, the project ended, the goals were met, but the students weren't ready to give it up yet. New ideas were begging to be explored and work became play. "Next time, I'd like to have time to play a little more," wrote one very serious student. "I'd like to have a longer passage to work with, and also, I'd like to test it on a lower division student and then revise." Even as time ran out, students stated that the project had given them a sense of satisfaction, that they wanted to see the other projects in their completed form. They expressed a desire to learn more about linguistics and add to the project by finding other linguistic variations. "Acquiring useful information about computer use and programming gives me ideas about future possible projects and independent study projects," stated one student who, true to her word, is currently in Mexico collecting linguistic data.

Computer projects with students are time consuming and require a significant amount of one on one work. Though this may contribute to the positive reactions of students, their final comments indicate that their venture into development of **HyperCard** stacks was, in itself, a rewarding experience. "What amazed me the most, however, was not the students' projects, but how the computer made everything accessible to the user." "It was amazing to see what we started with and what we ended with, which was a heck of a lot."

CONCLUSION

Previous thinking about curriculum development for computers placed the responsibility directly on the language teachers themselves, aided by ideas from professional design experts, and algorithms from state of the art programmers (Pusack 1988, 38). Student involvement in the creation phase of computer based curriculum is seldom suggested. This study asks what would result if students were given a role in design of learning materials on computers.

One difference between the student designed **HyperCard** stacks and those we had designed previously is the concept of one card, one idea. The Navajo alphabet and vocabulary programs provide a new card for each sound and word, and in the linguistics program, each new card leads to discovery of a new concepts. Too many concepts on a single page tend to channel thinking along predictable paths. When each card is dedicated to one idea, the possibilities for creative branching across related concepts is enhanced, providing means for students to explore innovative connections between ideas.

The knowledge that their programs have real life application and that their discoveries are meaningful to others greatly enhanced the positive results of these experimental **HyperCard** development projects. As students discover for themselves the relationship between their individual interests and the new material, instructor energy otherwise focused on salesmanship may be expended more creatively. The design of programs which place tools of discovery and instruction directly in the hands of students, may be one of the most efficient uses of our time and expertise.

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PRESENTERS' BIODATA

Karen Earline Schairer, Assistant Professor of Spanish at Northern Arizona University, received her Ph.D. in Spanish Linguistics from the University of New Mexico. She has developed INFORMATION, a **HyperCard** based Latin American studies information database, and **ACCESS**, a hypermedia program providing an introduction to Spanish dialects through video, interactive audio exercises, and text. Both programs encourage and reward student input. Current research: what can we learn from student-developed **HyperCard** materials in terms of effectiveness and learner appeal?

Evangeline Parsons Yazzie, Assistant Professor of Navajo at Northern Arizona University, earned her Ed.D. in Educational Leadership at Northern Arizona University. Her abiding interest in maintenance of the Navajo language and culture lead to establishment of the NAU Navajo Translation and Interpretation Certification Program which has grown from 25 to 160 students in three years. Its success involves her in development of innovative and appropriate curriculum.

Louise K. Yazzie from Cameron, Arizona, is a mother of seven and grandmother of one, pursuing a dual major in Social Work and Speech Communication (emphasis in pre-law) with minors in Business and the Navajo language. She is the part-time secretary for the Navajo Translation and Interpretation Center.

Darrick Franklin from Tohatchi, New Mexico, will graduate in May of 1996 with a degree in Elementary Education. He plans to teach the Navajo language on the reservation and will meet the need for more Native American teachers, especially men, to work on the reservation. He has been a cross country runner for NAU for the past four years.

Dawn Wheeler from Window Rock, Arizona, graduated in May of 1995 with a degree in Criminal Justice. She holds a black belt in the martial arts and plans to join the police force on the Navajo reservation. Dawn believes that writing on the computer is like preserving the Navajo language in stone for future generations.

Roselyn Thompson, a grandmother of four from Kayenta, Arizona, will graduate in May of 1996 with a degree in Criminal Justice. Roselyn, who wants to work with young people, will be the first in her family to earn a degree.

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THE ISRAEL EDUCATIONAL TELEVISION *EFL-MULTIMEDIA* PROJECT

MIRIAM SCHCOLNIK, TEL AVIV UNIVERSITY – ISRAEL

INTRODUCTION

Before the 1990s, the teaching of EFL in Israeli Junior high schools was characterized by streaming and teacher-centered classrooms. Streaming resulted in homogeneous grouping with advanced, average, and weak students in separate groups and teacher centered frontal teaching focused on linguistic instruction with few content based communicative activities. But streaming was found to widen the gap between advantaged and disadvantaged students and, therefore, to be detrimental to the democratic values upon which Israeli society is based.

Therefore, in the 1990s, junior high schools were encouraged to form heterogeneous classes and to opt for a learner centered communicative approach to language learning in which learners not only learn about language but are given the opportunity to use it. "In every classroom there are differences among the pupils in terms of their abilities, their areas of interest, their levels of motivation and achievement. Teachers need to recognize and respect these differences and enable each pupil to fulfill his/her own potential in an atmosphere which advances equal opportunity. The policy of the Ministry of Education, Culture and Sport is to have heterogeneous classes with a variety of teaching approaches, recognizing the wide range of abilities, and different learning styles" (Steiner 1994).

Diversity is thus perceived as desirable in the EFL classroom, in spite of resistance on the part of some teachers. "Some educators even blame their failures on diversity, instead of looking to diversity as a way to increase their success" (Dublin, et al. 1995).

Junior high school learners come from various neighborhoods and have different cultural and socioeconomic backgrounds. They have had 2-3 years of EFL instruction in elementary school. Whereas many of the learners have extra language exposure through English clubs, trips abroad and private tutors, others are completely dependent on school instruction. In addition, the seventh graders have varying degrees of computer literacy skills.

Israel Educational Television has a long history in educational innovation. For many years it has developed curricula, produced telecasts, and accompanying audio visual materials for a wide variety of subjects. In 1993 it started this unique Multimedia project aimed at enhancing the use of English and at encouraging cooperation in heterogeneous groups.

Our *EFL-Multimedia* program is based on the syllabus of the Israeli Ministry of Education. It is related to Israel Educational Television's Seventh Grade Course of Studies (telecasts, books, and audio cassettes) but it is independent and suitable for use with other EFL materials. The program is for intermediate EFL learners and is based on a learner centered communicative approach to language learning and an open integrated approach to multimedia. While using the program, learners with different linguistic abilities, learning styles and backgrounds work together towards a shared goal: to produce a multimedia presentation.

There are many EFL programs available, in which the computer assumes various roles (tutor, drill-master, etc.). We believe there is a place for all of them, but in our project, we decided to use the computer as a learning environment, an "immersion simulator." The task students get at the beginning of each unit provides an authentic purpose for them to use language, and the multimedia program offers opportunities for exposure to authentic language in context, including spoken and written language representing a variety of genres, registers, styles, and functions.

This combination of multimedia technology and integrated content based tasks provides opportunities for meaningful communication. We call our approach CBTLE (Computer Based Total Language Exposure), and believe it leads to CILU (Computer Induced Language Use).

BASIC ASSUMPTIONS

- Language learning occurs most effectively when students have opportunities to use language for real purposes: finding information, reflecting upon that information, interpreting and sharing it, using it to create something new.
- Opportunities for life-like activities can be provided in the classroom.
- Language learning is most natural when there is integration of all four skills: listening, speaking, reading, and writing.
- The diversity of heterogeneous groups can be advantageous to cooperative learning.
- Collaborative techniques have a positive effect both on learning and on social integration.
- Language instruction alone does not result in communicative competence.
- Multimedia technology combined with content based tasks can provide opportunities for meaningful communication.

We feel that by going through the research and development process as a team, and then presenting what they've prepared, students learn negotiation and presentation skills in English. The producers' role encourages them to take risks in English.

THE PROGRAM

EFL-Multimedia provides relevant tasks for learners to research, produce, and give multimedia presentations in a collaborative effort. The main stages the students go through while working with the program are:

1. understanding their task: reading/listening to it and showing that they understand by answering comprehension questions
2. research and investigation: exploring available data and looking at available samples
3. organizing and planning: choosing a format for their presentation (e.g. a multimedia album, an infomercial, a poster, a game) and choosing data (videos, pictures, sounds and texts) for their presentation
4. producing a multimedia presentation: deciding what to put where, inputting their own data where desired, editing existing data
5. presenting to others: presenting to other groups in the class, to parents, other classes, or even on television

By going through this process, students learn English in a motivating and creative way, while learning a lot of interesting information.

The CD-ROM includes:

- tasks,
- data banks (video, suitable texts, pictures, music, sound effects and voice recordings that match the texts),
- a glossary,
- vocabulary organized by semantic fields,
- help provided by a friendly character from outer space,
- a magic bubble that transports the children from "room" to "room,"
- a friendly authoring environment for production,
- templates to facilitate the production process,
- sample presentations that can serve as models for the students' own presentations,
- a portfolio that contains a record of the data the students have collected, and
- records of the path followed by students for research purposes.

Students can use the available data on the CD-ROM or input their own data (scan in, type, or record).

In the *EFL-Multimedia* project the computer is not used for individualized instruction, but for cooperative work. Three students sit around the computer and work together. Each one can contribute in his/her own way. The process is a shared one, a team effort, and the credit for the product goes to the group rather than the individual. Our program emphasizes cooperative learning, and "the key to cooperative learning is interdependence. The members of the group must need one another and have a stake in each other's understanding and success" (Dublin, et al. 1993).

I'd like to end with the thought that as educators we constantly look for alternatives that will offer better learning opportunities to all children. If the technology is now available, we feel we have to take advantage of it to make a difference. To quote Papert (1993):

> Strong dissatisfaction with today's schools is rapidly making it impossible to continue to tinker around the edges. And the computer is offering unprecedented opportunities to craft alternatives by creating an environment in which children could learn algebra and geometry and spelling and history in ways more like the informal learning of the unschooled toddler (or the exceptional child) than the educational process now followed in schools.

ACKNOWLEDGMENT

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PRESENTER'S BIODATA

Miriam Schcolnik is Director of the Learning Center and Course Coordinator at Tel Aviv University. She has many years of foreign language teaching experience from the elementary school through university levels. She has published numerous articles, EFL textbooks, and teachers' resource books. She has developed educational software for the Israeli Ministry of Education for Tel Aviv University. She is on the Israel Educational Television *EFL-Multimedia* project design and development team and a memeber of the Ministry of Education Committee for the Advancement of Computers in the Schools. She was a Visiting Scholar at Duke University in the fall term of 1992/93.

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A TALKING TEXTBOOK: GRAMMAR — AN EDUTAINMENT AND MULTIMEDIA APPROACH VIA WinCALIS 2.03

REINHARD SCHULZ

IMAGINE

WinCALIS 2.0 SPEECHPR
Lesson Options Tutorials Language: English/W.Europe Help
I don't like school much. Most subjects are useless anyway.
Brian
Brian W. (16 - looks 26) came next. He was on his way to football practice (where else?). He told me he didn't like school much. He thought that most subjects were useless anyway. (Useless on the football-field, Brian??)
MCI Control Bar

Screen 1.

Imagine you are asked to click on a button or type in a character and you hear Brian talk. He tells you something about what he thinks school is like. And via clicking on the button "Listening to Paul's report" you'll hear Paul read out his report he wrote for the school magazine. The **MCI Control Bar** enables you to stop the sound, to resume, to quit the stream of words, to repeat your listening period whenever you like to. And if you lack some words, you'll be able to get the explanation of the new words just via a click on the button "new words." But at the same time you may leave this image by typing c for **continue** or m for **menu**.

This is intended to give the readers an image of individualized language learning via computer technique. It depicts what options the learners have to handle the computer routine (click on or type the underlined letter) and the learning procedure (listen as often as you like, interrupt the speaker whenever you want to, listen or reread, or repeat what the speakers say). A variety of different exercises and tasks can be done depending on the fantasy of the users.

I am tempted to call this a talking textbook. The talking textbook as a new medium of verbal communication does not wipe out the old ones, does not make teachers superfluous in the learning and teaching procedure of second languages in school. No doubt experience has shown that with the development of a new medium, the old media will not disappear but will be transformed, will be reinforced, the teachers will not be pushed out of the classroom, but will be provided with another mighty electronic tool to help them in the business of teaching and learning.

STREAMLINING SOME IDEAS CONCERNING THE COMPUTER AS A MEDIUM

A sigh of relief often runs through a classroom when the school bell tolls the end of the grammar lesson. Grammar — a Procrustean bed for both students and teachers. We may in a language course postpone the unbeloved grammar as long as we like, at one point we'll reach the point of no return, where grammar gives the last answer to language questions and problems. It is as simple as this: we cannot teach a language, mother or foreign tongue, first or second language in school or any other institution, without teaching and learning grammar. The vital question is not "why," but "what" and "how."

What are the problems the students have to face when being taught grammar in school? The question arising at this point is whether they are able to learn grammar on their own? Textbooks used in schools are not planned to be "learners' books." They are primarily supposed to help teachers to teach, not to help students to learn, in as much as the students need teachers as a medium to work with a textbook properly.

And in the classroom vital psychological rules of individualized learning cannot be regarded as they should be to give appropriate time for receiving the language phenomena, to give sufficient time and opportunity for practicing content and form, repeating some steps in the learning procedure when necessary, having constant and immediate access to similar or enhanced language material. Furthermore the students feel that there is a lack of continual reinforcement in the learning process and the correction of errors, together with insufficient repetition and revision when required. And often students miss the spoken and heard language during their individual practice in school and at home or wherever they practice on their own.

It must be stressed strongly that teachers play a vital role in the procedure of teaching and learning a foreign language. And we must make sure that everything teachers can do better should be up to them. And we know that a lot of things in language teaching and learning cannot be done by a machine. But we assume that we do not know a lot about what the students can do to improve their language skill and competence with the help of courseware via computer technology.

The importance of a systematic approach to the teaching of listening comprehension is definitely a vital clue for the development of courseware in language instruction.

The multimedia approach gives a chance to help in the learning and teaching procedure. It has to be made clear at this point that this learning courseware was originally planned and intended for students who prefer individualized learning to classroom lessons and try to find a pedagogical tool which provides them with the means of individualized and autonomous learning. With the help of a powerful and mighty tool, namely **WinCALIS** 2.0, it is possible for teachers to implement the devices of individual and autonomous learning in computerized learning and teaching sequences of their courseware such as those shown in the presentation of the courseware **Reported Speech.**

The last years have proved that a computer can have a variety of functions in the learning of a foreign language: it can be used as a preparation for new material or as a reinforcement of work already done in the classroom. It can also be used in various phases of language learning; in the preparation of new material, in working with and on the language and in applying it to grammar or to new language situations.

Another idea underlying this attempt is to show how the program **Reported Speech**, created using the authoring program **DOS CALIS** 2.4 and the **CALIS** authoring language as a strict reading program, has been updated and upgraded to a multimedia sequence using the spoken and heard language, some graphics, pictures, and charts to make the grammar of a chosen language item or phenomenon more plausible. The courseware could be called a "talking textbook." The language used here does not only consist of silent characters and written texts. Everything, even the accompanying guidance through the program routines or corrections and reinforcements, can be made to be heard.

And the third idea is to make interested but hesitant teachers audible to what can be done with this electronic teaching and learning device, the computer, and how close the multimedia approach is to their current methodological ideas of teaching and learning a second language in school. It may be that some teachers even will become stimulated to produce some sequences or programs on their own.

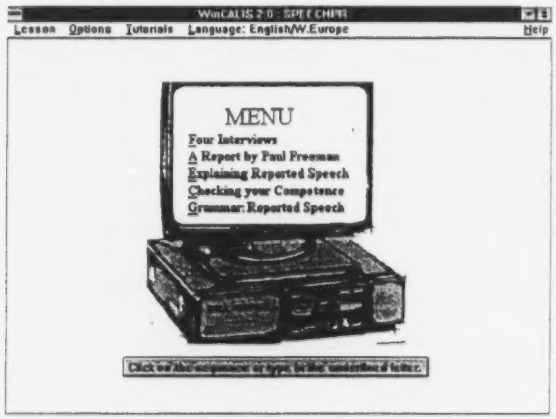
THE PROGRAM ITSELF[1]

The first image makes the students familiar with what they have to deal with. A lot of heard language is implemented. The song "Why Don't You Answer My Question" is to be heard and two graphics are to be seen which indicate that they are going to be dealing with direct and reported speech in situational grammar (Screen 2).

Screen 2.

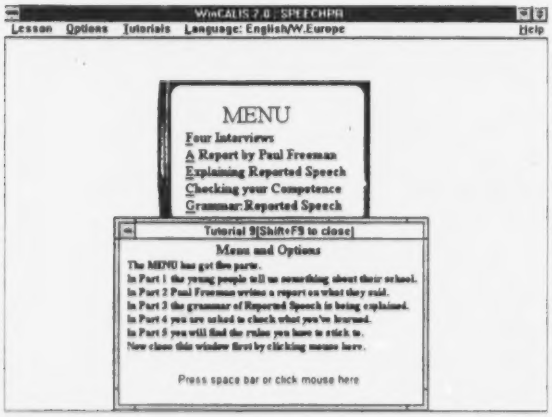
This program is monolingual in so far as all instructions and assistance are given in the foreign language. All assistance, however, from the meaning of a single word to the full and complete translation of all instructions into the mother tongue, can be obtained merely by pressing the appropriate button or key or clicking on an image.

THE MENU



Screen 3.

The learning program **Reported Speech** consists of five learning sequences. A menu displays to the students the various options they can choose. The direction window can be read and after use disabled by pressing space bar or clicking on the direction window (Screen 4).



Screen 4.

The students are asked to read the information pertaining to the content of the several sections along with hints. Eventually students are asked to "Press spacebar or click mouse here" to do the next step, namely to choose the first sequence from a menu.

NOTE: Individual learning means that the learners must receive all the information they need to do their job efficiently and sufficiently. They should be supported by a simple way of running the program, so that most of their attention should be directed to the language side rather than to the technical side of handling the computer. The students should not have to read a lot of instructions or directions having to do with running the program, but should only have to deal with the content of the program itself. This should be done by a simple means, say clicking on a button on which the information is printed or by typing in a key. Mostly typing in a key is quicker and easier than the handling of a mouse.

FIRST SEQUENCE: FOUR INTERVIEWS[2]

On screen we then see the photos of the four protagonists, two girls and two boys being involved, and at the same time hear them tell one after the other what they think of school (Screen 5).

The students are then free to choose whether to listen to all of them or several of them or one of them again. They even can listen to them and repeat what they have heard. They can do it as often as they like.

Screen 5.

BEST COPY AVAILABLE

As this is the phase of spontaneous listening, the students will not be provided with any written text. If they need help with the words, they can click on the button "new words." The button "new words" indicates that from the very first moment onward, the students have instant and immediate access to a help in their mother tongue. They are free (as always) to make the decision whether to use this help function or not.

Some Remarks on the Monolingual Approach

This courseware is monolingual as far as all instructions and assistance are given in the foreign language. But there are exceptions. Should the information concerning the program itself or the instructions pertaining to grammar rules or tests prove to be incomprehensible because of their complexity, the learners can always call up a short explanation or even the full translation in their mother tongue (see Screens 10 and 13).[3]

The **MCI Control Bar** allows the students to manipulate the sound clip. They can play, pause, resume, stop the sound, or fast-forward and rewind the sound clip when this toolbar is showing (see Screen 5, bottom corner, right).

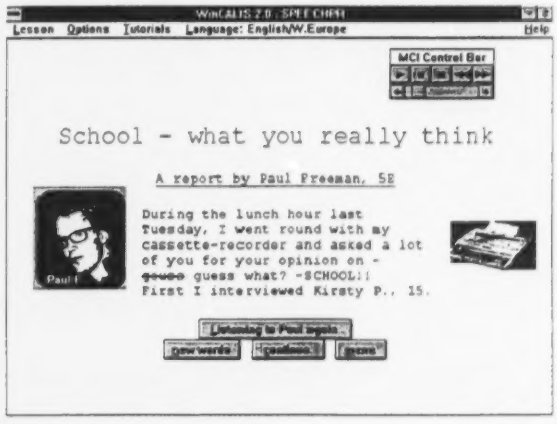
Screen 6.

The screen tells us that the readers are informed what **MCI Control Bar** is intended for and they can practice, if they like, the use of it. Hands on is sometimes the best way of learning something.

SECOND SEQUENCE: FOUR REPORTS

Now the next step is listening to Paul and reading Paul Freeman's reports. When the image becomes visible, we first listen to the noise of Paul Freeman's typewriter and hear him then reread his report. This time the report is shown on the screen and the students can read while listening or listen while reading.

Again with the help of the **MCI Control Bar**, the students can listen to Paul as often as they think is necessary to achieve complete comprehension or they can read out aloud or repeat what Paul says. It is unlikely that at this early stage of the learning period the students are aware that they are practicing reported speech unconsciously.


Lesson Options Tutorials Language: English/W.Europe Help
MCI Control Bar
School - what you really think
A report by Paul Freeman, 5E
During the lunch hour last Tuesday, I went round with my cassette-recorder and asked a lot of you for your opinion on - guess what? -SCHOOL!!
First I interviewed Kirsty P., 15.
Paul

Screen 7.

After students have clicked on the button **continue** or have typed **c**, they will listen to what Kirsty has to say about school and let Paul give them his report on Kirsty's remarks. ("Listening to Paul's report.") Direct and reported speech are being heard and being read.

Paul's photo is shown to make the students aware that it is not a disembodied voice they are listening to. The scanned typewriter should explain that Paul has typed this report on a typewriter and is rereading it to himself.

Paul closed the first part of his report stating: "First I interviewed Kirsty P., 15." When students have typed **c** for **continue** or clicked on **continue**, they will begin their grammar sequence by listening to Kirsty. The listening procedure is supported by the written text because complete comprehension is a vital clue at this step (Screen 8).

BEST COPY AVAILABLE

WinCALIS 2.0 : SPEECHPR
Lesson Options Tutorials Language: English/W.Europe Help
School is OK, really.
You can make so many friends.
Kirsty
She thought that school was OK, really. She said that you could make so many friends.
(Do you mean boyfriends, Kirsty?)
Paul
MCI Control Bar

Screen 8.

WinCALIS 2.0 : SPEECHPR
Lesson Options Tutorials Language: English/W.Europe Help
Direct and Reported Speech
In direct speech
the original speech is repeated literally,
i.e. word for word. (Check it. Click on Kirsty.)
In reported speech you may
a) stay close to what was said
b) give a freer version of what was said
c) report what was said as a summary (Click on Paul.)
Kirsty said:
Paul Freeman reported:
She thought that school was OK, really.
She said that you could make so many friends.
(Do you mean boyfriends, Kirsty?)

Screen 9.

The students are asked to click on "Listening to Paul's report" and hear the part of Paul's report pertaining to Kirsty. Again it is the learners' sole decision to make the most of it by repeated listening, rereading aloud, and speaking after the narrator's model. The **MCI Control Bar** makes individual practice feasible.

The last step described will be repeated with Imram, Jill, and Brian as well. The constant listening, relistening, reading, and rereading (silently or aloud), introduces the written and spoken form as well as the phonology of the new language items; the repetition of the comparison between direct and reported speech should make the learners familiar with two different grammar structures even though they can't explain the functioning of those grammatical forms. This has to be done in the phase of making conscious what has been unconsciously comprehended so far.

THIRD SEQUENCE: EXPLAINING REPORTED SPEECH

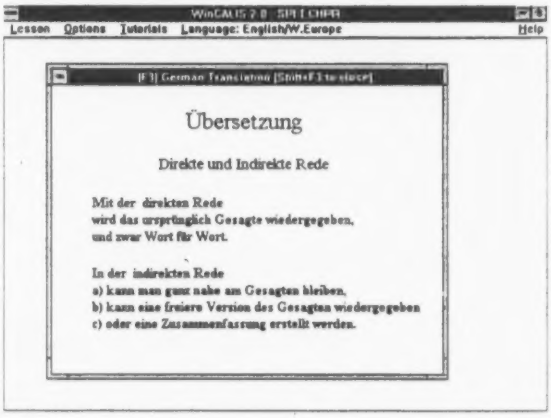
After students have chosen the sequence, they will receive the information they need to become acquainted with the difference between direct and reported speech.

The rules will be supported first by heard examples. If students click on "Kirsty" or on "Kirsty said," they will listen to Kirsty, if they click on "Paul" or on "Paul Freeman reported," they will hear Paul's report on what Kirsty said (Screen 9).

Deductive understanding can only be achieved when the preconditions for drawing conclusions are granted.

After the initial part of more or less playing with language, where the situation of receiving language material is shown, where new words are explained, there still remains the explanation of the transformation of structures, and direct speech into reported speech. This will be explained in the foreign tongue. But as comprehension often depends on the grasping of the meaning of one single word, and the grammar rule is so important here, a translation into the mother tongue is made available. The complete German translation can be called up by typing in T or clicking on the button: "Translation of this advice."

If students type in T or click on "Translation of this advice," Screen 10 appears and the students can read the translation.


WinCALIS 2.0 : SPEECHPR
Lesson Options Tutorials Language: English/W.Europe Help
Übersetzung
Direkte und Indirekte Rede
Mit der direkten Rede
wird das ursprünglich Gesagte wiedergegeben,
und zwar Wort für Wort.
In der indirekten Rede
a) kann man ganz nahe am Gesagten bleiben,
b) kann eine freiere Version des Gesagten wiedergegeben
c) oder eine Zusammenfassung erstellt werden.

Screen 10.

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If the learners need the explanations of some words, they can click on "new words" or type n.

Screen 11.

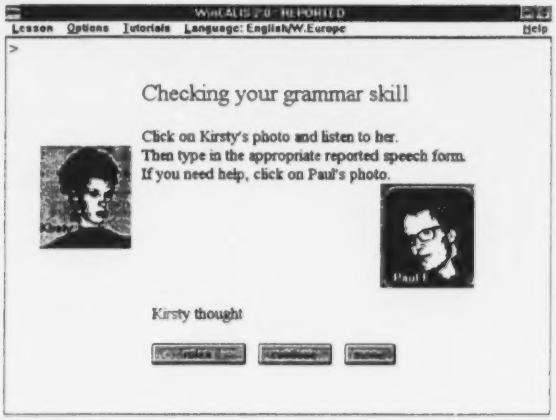
In this case the students are provided with the vocabulary equation English – German.[4] Here is the quickest way of informing the students of the meaning of words without giving too much attention to complicated definitions or explanations in the second language, splitting, and therefore weakening their concentration.

FOURTH SEQUENCE: CHECKING YOUR COMPETENCE

Now it is time for the students to check what they have learned so far. Up to this point, the receptive skills listening and listening comprehension and reading and reading comprehension have been used during the grammar learning process. Now the third skill, writing, will be added as a means of expressing grammar skill and competence.

It is, of course, indispensable to prove that learning has taken place, to check on the results and to correct errors. This is especially important in the individualized learning process since this can be done very efficiently via the anticipated means of responses, corrections, reinforcement, and evaluation.

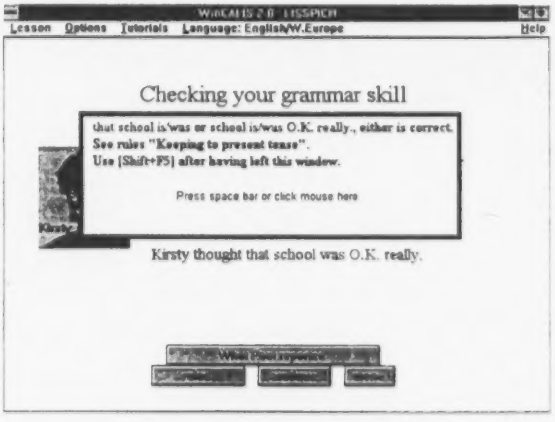
Every task, exercise, and text has a confirmation stage. In this case of gap filing, the students have to listen to direct speech ("Click on Kirsty and listen to her.") and to insert the correct form of reported speech (Then type in the appropriate reported speech form as seen in Screen 12.) Help can be received and the result can be checked by clicking on Paul's photo.


Lesson Options Tutorials Language: English/W.Europe Help
Checking your grammar skill
Click on Kirsty's photo and listen to her.
Then type in the appropriate reported speech form.
If you need help, click on Paul's photo.
Kirsty thought

Screen 12.

If help with the grammar is needed, the students can click on "What Paul reported" and will hear Paul's report on Kirsty. "What Paul reported" (Screen 13) has been implemented to remind the students what Paul had said using reported speech: "Kirsty thought that school was OK really." It is a kind of first aid and a reinforcement at the same time. The students now can make up their mind how to fill in the gap.

If the students fill gap 1 with: "Kirsty asked herself what she thinks of school" and then pressed Enter, they'll receive a response which in itself is confirmation and reinforcement (Screen 13) and additionally indicates what other possible forms used as well as where more information can be gained from a hypertext and where the translation into the mother tongue has been implemented (Screen 14).


Lesson Options Tutorials Language: English/W.Europe Help
Checking your grammar skill
that school is/was or school is/was O.K. really., either is correct.
See rules "Keeping to present tense".
Use [Shift+F5] after having left this window.
Press space bar or click mouse here
Kirsty thought that school was O.K. really.

Screen 13.

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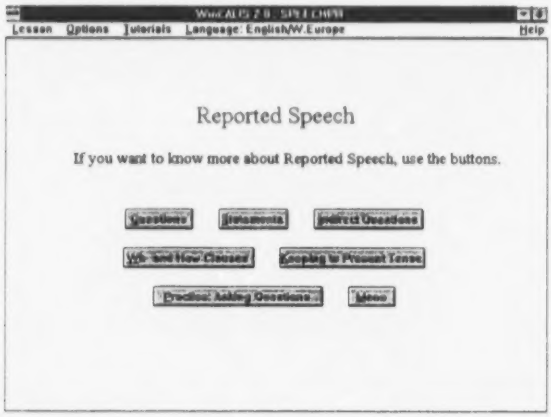
If the "rules" button has been clicked on, the rules on "Keeping to present forms" will be displayed. Screen 14 shows one of six different screens with rules and examples the users can achieve using help buttons. The last line: *Deutsche Übersetzung der Regel => mit der Scrollbar* offers the option of getting the translation in the mother tongue.

Lesson Options Tutorials Language: English/W.Europe Help
Keeping to present tense and present perfect
1 We keep to present tense and present perfect when we want to say that something is still true at the time of reporting.
Example:
Margaret said: "I'm not good at maths. It has been my worst subject since my first day at school."
Margaret said that she's not good at maths. it has been her worst subject since her first day at school.
2 The simple present is often used when we want to say that something is permanently the case (laws of nature, characteristics, habits).
Example:
I told him ten times: "The ace is the highest trump card."
It took a long time to make him understand that the ace is the highest trump card.
NOTE: A backshift to past tense or past perfect is possible in both cases.
Deutsche Übersetzung der Regeln =>mit der Scrollbar

Screen 14.

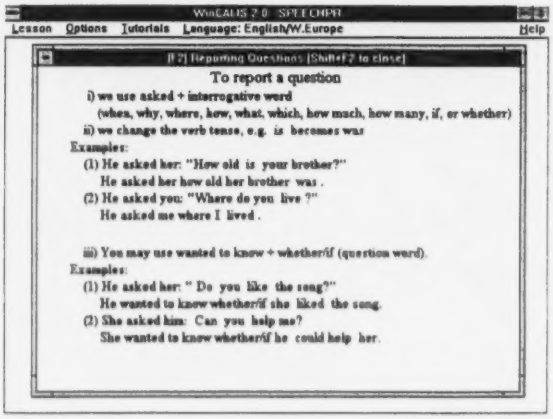
FIFTH SEQUENCE PRACTICE: REPORTED SPEECH

The first four sequences had to do with introducing the new grammar item in situations and showing function and form, followed by the explanation of the structures and their usage in normal language situations. Now it will be enhanced. The different rules will be introduced and examples are given. The students will be offered a lot of different exercises accompanied by anticipated responses and error corrections. The students can choose from the following menu seen in Screen 15.


Lesson Options Tutorials Language: English/W.Europe Help
Reported Speech
If you want to know more about Reported Speech, use the buttons.

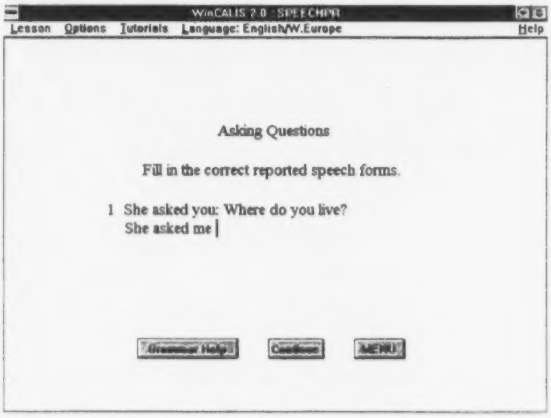
Screen 15.

If students want to practice the use of reported speech in "Practice: Asking Questions," they can act twofold. Firstly they can choose "Questions" and will receive the rules with examples and can get a short survey of the item or can work through it in detail (Screen 16).


Lesson Options Tutorials Language: English/W.Europe Help
To report a question
i) we use asked + interrogative word
(when, why, where, how, what, which, how much, how many, if, or whether)
ii) we change the verb tense, e.g. is becomes was
Examples:
(1) He asked her: "How old is your brother?"
He asked her how old her brother was .
(2) He asked you: "Where do you live ?"
He asked me where I lived .
iii) You may use wanted to know + whether/if (question word).
Examples:
(1) He asked her: " Do you like the song?"
He wanted to know whether/if she liked the song.
(2) She asked him: Can you help me?
She wanted to know whether/if he could help her.

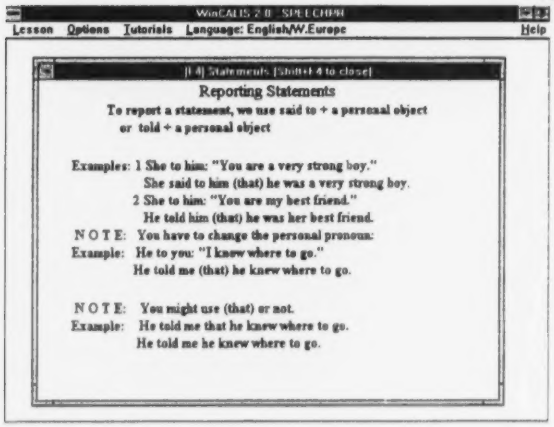
Screen 16.

Then they can leave with a click on the screen and can choose "Practice: Asking Questions" and Screen 17 will be displayed.

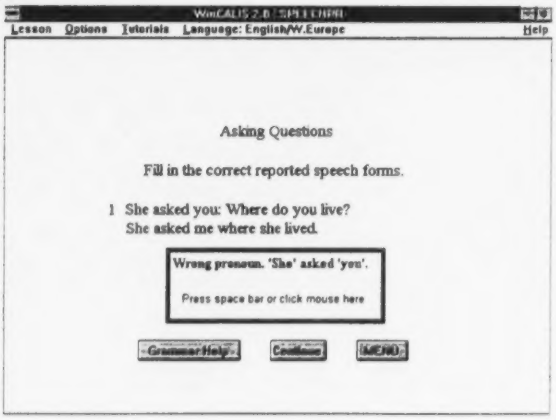

Lesson Options Tutorials Language: English/W.Europe Help
Asking Questions
Fill in the correct reported speech forms.
1 She asked you: Where do you live?
She asked me

Screen 17.[5]

If any difficulties arise, the button "Grammar Help" has been provided. If the students click on it, the rules with examples will be shown (Screen 18).


WinCALIS 2.0 : SPEECHPR
Lesson Options Tutorials Language: English/W.Europe Help
[1-4] Statements [Shift+1-4 to close]
Reporting Statements
To report a statement, we use said to + a personal object
or told + a personal object
Examples: 1 She to him: "You are a very strong boy."
She said to him (that) he was a very strong boy.
2 She to him: "You are my best friend."
He told him (that) he was her best friend.
NOTE: You have to change the personal pronoun:
Example: He to you: "I know where to go."
He told me (that) he knew where to go.
NOTE: You might use (that) or not.
Example: He told me that he knew where to go.
He told me he knew where to go.

Screen 18.


WinCALIS 2.0 : SPEECHPR
Lesson Options Tutorials Language: English/W.Europe Help
Asking Questions
Fill in the correct reported speech forms.
1 She asked you: Where do you live?
She asked me where she lived.
Wrong pronoun. 'She' asked 'you'.
Press space bar or click mouse here
Grammar Help
Continue
MENU

Screen 20.

The anticipation of reinforcements, responses, and error corrections is a demanding job. As an example: if the students fill the gap

"She asked you 'Where do you live?'" She asked me _____ , the response appears

"where I live."

close to the error and a hint is given where further help can be gained. This hint can even be spoken.

WinCALIS 2.0 : SPEECHPR
Lesson Options Tutorials Language: English/W.Europe Help
Check the form of the verb.
See Reporting Questions, press [Shift+F2].
Press space bar or click mouse here
She asked me where I live.
Grammar Help
Continue
MENU

Screen 19.

The number of errors one can make in reported speech is hardly predictable, a lot of responses have to be implemented as shown in the example on the Screens 19 and 20.

PREPARATION FOR A TEST IN CLASS

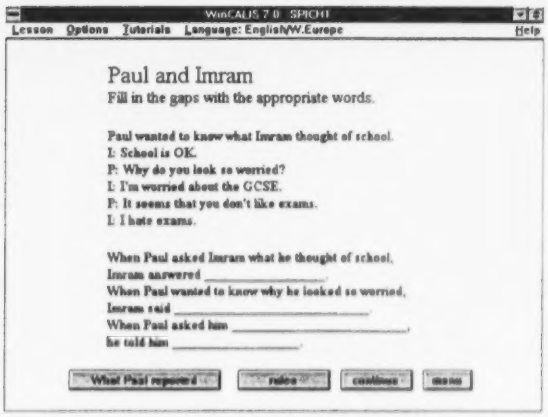
A test in class is different from the test via a computer. In class, commonly, there won't be any computers and there won't be any software for testing or checking the language items we have practiced and learned so far, namely the forms of reported speech.

Normally the students work with pen and paper in class, and the skills which they are supposed to use are reading, writing, and memorizing grammar rules. So we have to install a test which runs similarly to that in class.

As we have to make the students familiar with such a test, one is simulated and in the first run, help will be given.

In the second test run, no help at all will be given. Now a real test-in-class situation is provided.

Screen 21 displays such a simulated test in its first run.


Lesson Options Tutorials Language: English/W.Europe Help
Paul and Imram
Fill in the gaps with the appropriate words.
Paul wanted to know what Imram thought of school.
I: School is OK.
P: Why do you look so worried?
I: I'm worried about the GCSE.
P: It seems that you don't like exams.
I: I hate exams.
When Paul asked Imram what he thought of school,
Imram answered _____.
When Paul wanted to know why he looked so worried,
Imram said _____.
When Paul asked him _____,
he told him _____.

Screen 21.

Screen 22 displays a test run without any help.

Lesson Options Tutorials Language: English/W.Europe Help
Asking Questions
Fill in the correct reported speech forms.
2 He asked her: Why are you so disappointed?
He asked her
MENU

Screen 22.

This time the score is being presented after the sequence has been finished. It could read somewhat like this one:

Screen 23.

SUCCESSIVE PRACTICE

In addition to "Asking Questions" some more sequences are provided, such as "Making Statements and Requests," "Indirect Questions," "Why and How Questions," and "Keeping to Present Tense and Present Perfect." Not to forget the then succeeding situational tasks, where the students are asked to check and prove what they have learned. This is a new program: "Nearly everything you need to handle reported speech."

WinCALIS LANGUAGE AND AUTHORING PROGRAM

The tool **WinCALIS** 2.0 and the **CALIS** Programming Language were used to create the courseware **Grammar**. I am a language teacher and have done some computerized teaching and introduced the learning aspects of computing to students and teachers. In 1984, it was a frustrating situation for a language teacher to know that the computer could be a mighty tool in language learning if teachers could be enabled to create software, e.g., courseware according to the current standard of the methodology of language teaching and learning in Europe, providing a higher standard than those found back then. Then some Dutch teachers recommended **DOS CALIS** and **CALIS** language as instruments that probably could give a hand in reaching the set level of aspiration. During a long period of the autonomous learning phase of getting acquainted with the features of the **CALIS** programming language, I discovered that I had found what I was searching for. The feasibility was proved in the application of the tool over a four year period in language courses in a school. And **WinCALIS** as the successor even enhances the standard of **DOS CALIS** enormously as shown in the previous multimedia grammar sequence.

HARDWARE AND SOFTWARE REQUIREMENTS

- A personal computer with an Intel 80386, or higher processor (80486 recommended) and a minimum of 4M memory running in standard or enhanced mode.
- A graphics adapter and monitor supporting one of the following systems: EGA, VGA, MDA, VESA, SCGA, 8514a, or Hercules Graphics card.

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- A hard disk with 4M of free disk space and one of the following: 3.5" (1.44M) or 5.25" (1.2M) disk drive. **Windows** 3.1 or higher running on your machine.
- With multimedia sequences:
  - A sound card such as Soundblaster Pro
  - A video card such as Videoblaster
  - A scanner such as Logitech

WinCALIS PACKAGE

The **WinCALIS** package consists of five main modules:

1. the **WinCALIS** Student Workstation
2. the **WinCALIS Author**
3. the Multimedia Editor
4. the Multilingual Printer
5. the Truetype Printer

The **WinCALIS** component is that part of the package which actually runs the sequences. The sequences themselves may be created quickly and efficiently by **WinCALIS Author** and can be sophisticated and elaborated by the use of the **CALIS** programming language. After a sequence is created, it can be run by the **WinCALIS** Student Work Station.

The Multimedia Editor allows the insertion of audio clips, video clips, and audiovisual clips from Laserdiscs and VCR's (provided you have all the necessary hardware). Finally, the **WinCALIS** printers allow the printing of text files complete with special **CALIS** coding information.

Put together, these five components form an easy to use, multilingual, multimedia language instruction tool.

The author used 2, 3, and 4 of this package and a scanner to create the illustrated sequences seen in this paper.

BY THE WAY

If asked, the author would not hesitate to answer that it is possible, as in this case, to write a program that transforms a written textbook into a "Talking" or "Talked Textbook."

NOTES

1. **CALIS** Programming Language and **WinCALIS** Author 2.03, Duke University, Durham, NC, were used to create the sequences of this courseware.
2. The program is based on ON LINE 1/2, HEUREKA, Klett 1993/1994, created by the author, using **DOS CALIS** 2.4, a **DOS** Version. **WinCALIS** 2.0, which is the Windows Version is the further development of **DOS CALIS** and capable of implementing more multimedia features such as graphics, audio and video. The listening texts are taken from Learning English, Red Line 5, Cassette für Schüler und Lehrer, Ernst Klett Verlage GmbH und Co. K.G. Stuttgart 1988.
3. Here, the mother tongue used is German, but **WinCALIS Author** 2.0 can communicate in more than thirty languages, Chinese, Japanese, Arabic and Hebrew included. Being multilingual is another outstanding feature of **WinCALIS** 2.0.
4. The print out is in black and white. The design of the program uses different colors. In this case the German explanations are in red color. The background is in dark cyan, the characters and the graphics are in a different color (e.g., Kirsty wears a dark pullover and a pink sweatshirt). Sometimes a color signals negative or positive responses, etc.
5. In designing a screen, several alternative font sizes can be set, they range from TINY via FINE, SMALL, MEDIUM, LARGE, XLARGE to HUGE, and administer several possibilities for a sophisticated design.

PRESENTER'S BIODATA

Reinhard Schulz is a retired Principal of a secondary school. He also used to be a Supervisor at a language teachers' seminar and a Lecturer of Methodology in English as a Second Language (ESL) at Dortmund University. He was a Charles E. Culpeper Visiting Scholar in Modern Language Computing at Duke University in 1992 where he contributed strategy, methodology, and content to a Summer Seminar for students from a variety of countries in addition to the U.S.

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RETHINKING FOREIGN LANGUAGE WRITING AND LISTENING

THIS SESSION IS PROUDLY SPONSORED BY HEINLE & HEINLE PUBLISHERS

VIRGINIA M. SCOTT, VANDERBILT UNIVERSITY
S. NOBLITT, UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

ABSTRACT

Professor Scott discusses Vanderbilt's use of technology to introduce creative writing in French at the first-year level. The project is based on a "writing to learn" approach that uses **Système-D** software running on IBM personal computers in the language laboratory, dorm rooms, and micro-computer lab. Vanderbilt's program utilizes a "tracking" program that allows Professor Scott and her graduate assistants to collect valuable research data on second language acquisition. She discusses the results of technology based instruction and comments on the benefits of a fully integrated approach to curricular innovation.

Listening comprehension is often approached as if hearing were solely an acoustic problem. In reality, much more is involved in understanding what someone is saying. Far from being a "passive" skill, listening requires the active creation of plausible messages from sometimes messy acoustic input. People talk at the same time, ambient noise masks speech sounds, and people do not pronounce words as unambiguously as the written language — an idealized form — would lead us to believe. A significant portion of what people hear is supplied by what they understand from the context of the speech event. It is in this since that we may speak of of listening comprehension as being essentially cognitive.

What elements in the learning environment assist the learner in gaining skill in processing both the cognitive and acoustic elements of listening? Above all, the learner needs to deal with authentic samples of language in context. Since native speakers of a language appear to listen more to the speaker's intent than raw acoustic input, it is important for the learner to appreciate how intended meaning is negotiated in another language. Intent is informed by an elaborate set of cultural assumptions that are part and parcel of learning the elemental facts of a foreign language.

Professor Noblitt will demonstrate how training in listening comprehension that utilizes interactive multimedia provides an opportunity to offer a more authentic learning environment for the language student. By observing visual and linguistic sensory inputs, the student is able to arrive inductively at intention . The increased complexity of input through interactive multimedia thus enhances cognitive processing and renders the listening task more meaningful.

COMPANY PROFILE

Heinle and Heinle Publishers, sponsor of this session, publishes innovative print and electronic foreign language and ESL materials. Included are texts, software, multimedia, and video designed for the middle, secondary, and college classroom and materials for teacher development. It is our goal to change to way the world learns languages.

PRESENTERS' BIODATA

Dr. Virginia Scott is the Director of Undergraduate Language Instruction and an Associate Professor of French at Vanderbilt University. She has published articles in *CALICO Journal, Modern Language Journal, French Review, Foreign Language Annals,* and *SCOLT Dimension.* Currently, she is serving a four-year term on the Board of Directors of SCOLT.

Professor Noblitt received a B.A. and an M.A. degree in French literature at the University of Virginia and was a Fulbright Scholar at the Sorbonne. He received a Ph.D. in French linguistics at Harvard. His current appointment at UNC-CH involves research on the use of information technology for teaching learning.

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COLLECTION AND SORTING OF DATA FOR COLLABORATIVE RESEARCH PROJECT ON GERMAN WORD ORDER

SOFUS E. SIMONSEN AND JOSEPH F. STEFFEN, NORTH CAROLINA STATE UNIVERSITY

INTRODUCTION

This paper deals with the practical aspects of a collaborative research project between a colleague in linguistics, Dr. Barbara Fennell and Sofus E. Simonsen in German. Sofus E. Simonsen also has experience in the development of computer assisted language instruction (CALI) materials which serve both the purpose of instruction and that of data collection.

The project incorporated computer assisted language instruction techniques and statistical analysis common in language variation studies. These were used in a study of the acquisition of dependent clause word order in Modern German by students in beginning, intermediate, and advanced classes. The project entailed the development of objective testing exercises for the computer, computer tracking and data collection, sorting, and statistical analysis and interpretation of the results.

LANGUAGE MATERIALS

A number of German sentences with dependent clauses of varying difficulties with respect to word order were composed by the team members in collaboration with all the members of the German faculty. The categories chosen to work with were:

Same Subject in both Clauses

1. *Ich bin froh, daß ich gekommen bin.*
17. *Johann erinnerte sich plötzlich daran, daß er sie gestern vor dem Rathaus gesehen hatte.*

Different Subject in each Clause

1. *Joseph ärgert sich, weil Markus nicht spielen will.*
2. *Ich bin erstaunt, daß sie gekommen ist.*

Intervening Adverbials

4. *Die Lehrerin weiß ganz genau, daß Jonah gestern nicht zur Schule gekommen ist.*
5. *Der Junge erklärte seiner Mutter, wie er das Buch sorgfältig auf den Tisch gelegt hatte.*

Dependent Clause First

1. *Daß die Studenten ihre Hausaufgaben zu Hause gelassen haben, ärgert die Lehrerin sehr.*
9. *Daß kleine Kinder heutzutage noch in Fabriken arbeiten müssen, ist sehr traurig.*

Full Noun Phrase Subject in Dependent Clause

2. *Es ist oft der Fall, daß Studenten wenig Geld bei sich haben.*
5. *Hast du gehört, daß Frank seiner Tochter ein Haus gekauft hat?*

Pronominal Subject in Dependent Clause

1. *Der Arzt behauptet, daß es nicht normal ist, 14 Stunden pro Tag zu schlafen.*
20. *Meine Mutter war erstaunt, daß er ihrer Tochter einen Blumenstrauß gegeben hatte.*

One hundred twenty of these sentences, 20 in each category, were then chosen to be entered into a program which would be designed to track the students' work progression.

As is often the case with projects of this nature, the development and implementation had to be carried out immediately. The funding for the project was announced early January, 1994, and the money had to be used before the end of the fiscal year, i.e. before end of June. This meant that the data had to be collected from the students in the spring semester.

No more than a couple of months were available to develop and test the program and allow students to start using it by mid March, giving them only slightly more than a month to complete all the exercises.

AUTHORING SYSTEM

Our next decision was to determine which authoring system to use. We had discussed purchasing **Authorware Pro** but did not at the time have the funding for it; **WinCALIS** did not at the time provide tracking or at least not in a form needed for our project. We did not at the time have a programmer on hand who knew **Pascal, C++**, or **Visual Basic**, or any other state of the art programming language, so we decided to stay with **PC/Pilot**, a **DOS** authoring program with which we were familiar, having used it to develop many CAL packages in the past. It is in many ways an outdated system, however, this choice afforded us the option of selecting old lesson templates and modifying them for our present needs. You do not need the latest programs to collect valid data as long as the simplest and most familiar tools will accomplish the task. We often tend to select tools which allow us unlimited options, but increased options carry a price. The more options you want, the larger and more complex the program tends to be.

INFORMATION ABOUT USER?

Several considerations went into the decision concerning what information to collect about the user. Since first semester students have very little experience with dependent clauses, we decided to leave them out of the project and begin with the second semester of the beginning level. For research purposes we only needed the users' class level to determine whether the scores came from a second semester, an intermediate, or an advanced user. Concern, however arose among the German colleagues about how to motivate students to do this extra work added after the syllabi were distributed, and how to ascertain that they indeed had done the work. With that in mind we decided to have the students type in their social security number (SS#) as well. This would allow the instructors to use the results anyway they wanted. In most cases they informed their students that this material would be scored and the scores would count as one test.

With that in mind, the first screen appearing when a student logged on indicates the language classes used for the project and then asks the user to identify which class he or she attends.

FLG 102 *type* 2	FLG 202 *type* 4
FLG 201 *type* 3	FLG 310 *type* 5

As the following excerpt from the program shows, if a user typed, 2 ,3 ,4 or 5, the program would direct the collected data to a record file named 102, 201, etc. If the user typed anything else but 2, 3, etc., the initial screen would return.

```
*CLASA
ts:g22,6;f7;a<          >;wrrrrr;f14
p:z e f
as:#X
m:2!3!4!5
jn:CLASA
c(x=2):x=102
c(x=3):x=201
c(x=4):x=202
c(x=5):x=310
ts:g24,6;f14
c:kls=x
t:FLG #kls
```

The user would then be asked to enter the SS#. After that the following message appeared: "There are 12 lessons to choose from. Enter the lesson number you wish to do." The computer would then bring up the chosen lesson, and it is at this point that the first data are written to the records' file selected earlier:

```
ts:g29,4;f15;aOne Moment Please...;*2(wrrrrrrrrrr)
x:"p:kG:GPROJECT\FLG-"!!X!!".REC"
k:" "
k:"Student ID:  "!!ssn$
k:" "
```

USER HELP

Materials developed for data collection pose special problems when it comes to help routines. There is no doubt that traditional teaching materials ought to make available all the help any user, beginner or advanced, may need or want. Curiosity should be stimulated and exploited to encourage the user to gain ever more insight into the subject being taught. In the case of materials being used for data collection, special care must be taken to assure that help rou-

tines do not corrupt or slant the data. In our case, for example, the exercises were to be used by students on the beginning, intermediate, and advanced level of language learning which on the one hand necessitates a broad range of help to assure that the beginning student is not overwhelmed. On the other hand, however, we did not want to call special attention to what was critical in this project. Students were never told that we were interested in word order only, that all other aspects of language production are overlooked. Thus we could not have an otherwise important help routine popping up when a user made a word order mistake, calling attention to German word order and allowing the user to select a tutorial on subordinate clause word order. Here the aim was not instruction but an attempt at finding out how well the user mastered the constructions in question. The decision was to give the users no help on structure at all. Instead every effort was made to allow the user to move easily and smoothly through the exercises with a minimum of distractions. Because of the different levels of the students, very liberal vocabulary help was given. A user might find the translation of a single word or of the entire clause.

INFORMATION TO BE COLLECTED

Although one might find it superfluous to collect the complete text of correct answers since that naturally is known, the researchers decided that an excess of information would be preferable to a deficit when the students had done their job and the collected materials were to be collated and prepared for analysis. The result was that a tracking routine was inserted to compile everything a user typed and identify each item as to lesson, unit, and question number as well as whether it was first, second, or third attempt. For good measure, we had the program add whether the answer was correct or incorrect. We furthermore recorded with a "No answer obtained," if a user simply typed "Enter" without attempting to answer a question. The last information to be gathered was whether and how often a student used the help available.

ANTICIPATED RAW DATA FILES

To obtain as large a sample of student input as possible, we not only had German students during the spring semester of 1994 but also the students during the summer semesters of 1994 go through the programs. The resulting data files were quite substantial and we expected them to look like the following excerpt:

Student ID: 332-74-9415

Q1.1 *weil ihre Freunde dort ein Picknick macn* NC
Q1.2 *weil ihre Freunde dort ein Picknick macn* NC
Q1.3 *weil ihre Freunde dort ein Picknick macn* NC
Ans. not obtained.
Vocab Helps= 0
1
Q2.1 *Daß UNO-Politiker leider noch keinen Frieden in Bosnien schaffen können* C
Vocab Helps= 0
1
Q3.1 *Erst wenn wir heute abend ganz spät ins Bett gehen* NC
Q3.2 *Wenn wir heute abend erst ganz spät ins Bett gehen* C
Vocab Helps= 0
1
Q4.1 *Die Studenten sind da alleine gestern mit dem Bus gekommen* NC
Q4.2 *Da sind die Studenten gestern alleine mit dem Bus gekommen* NC
Q4.3 *Da sind die Studenten gestern alleine mit dem Bus gekommen* NC Ans. not obtained.
Vocab Helps= 0
1
Q5.1 NC
Q5.2 NC
Q5.3 NC Ans. not obtained.
Vocab Helps= 0
1

The file, as expected, starts out with the user's SS# and then proceeds to "Q1" question one, first, second, and third try, recording exactly what the user wrote and identifying it as "NC" = incorrect. The user never calls for help but finally hits "Enter" as indicated by the "Answer not obtained" and goes to the next question. Questions number two and three are answered correctly whereas no attempt is made to answer question number five.

RAW DATA FILES WITH SURPRISES

Although we had tested the programs including data collection before putting them on the network, a closer look at the data files revealed features we had not anticipated. In the file excerpt below, the data appears to be in complete disarray, containing an-

swers to questions completely out of order. The first attempt at answering question five is followed immediately by the first attempt to answer question four, the second attempt at answering question one, and to make it even more confusing, the questions are not even from the same lesson. What happened?

In testing the programs, only one person at a time used the program. In real life on the network, several users were logged on simultaneously and if they happened to be on the same class level, e.g. FLG 310, information from each user would be collected in file FLG 310 every time a user came to a "keep" statement, resulting in files like the one below.

Q5.1 *dass Frank seiner Tochter ein Haus gekauft hat* NC
Q4.1 *Daß Ute ihre Hausaufgabe zu Hause gelassen hat* C
Vocab Helps= 0

Q1.2 *das ich gekommen bin* C
Vocab Helps= 0

Q3.1 *weil es gestern geregnet hat* C
Vocab Helps= 0

Q3.1 *weil es gestern geregnet hat* C
Vocab Helps= 0

Q3.1 *weil gestern es geregnet hat* NC
Q3.1 *weil es gestern geregnet hat* C
Vocab Helps= 0

Q5.2 *daß Frank seiner Tochter ein Haus gekauft hatt* C
Vocab Helps= 0

There are several ways in which this could have been avoided. All the collected data could have been kept in RAM until the entire unit was completed. This would present no problem since each simultaneous user naturally was working on his or her own computer. The reason this approach is not normally considered good programming procedure is that all data in RAM, not written to disc, will be lost if a power failure or any other irregularity causes the student computer to turn off. We could also have programmed a separate file for each student under the subdirectory FLG 102, 201, etc. and then merged the files later.

SORTING OF DATA FILES

The data were collected in files by level, i.e. FLG 102, FLG310. Within each of these files, a word processor was used to sort at first by question, then by correct or incorrect or no answer obtained, then by whether it was obtained on first, second or third try, etc. until the data were in the form in which **VARBRUL** could work with them. We used both Microsoft **Word** and **WordPerfect** for the task, but one could use practically any word processing or data management program.

PREPARING FILES FOR STATISTICAL ANALYSIS

The collected data would ultimately be subjected to a statistical analysis of variability, using **VARBRUL**, a statistical program designed specifically for the investigation of variation in language use.

After working some with the collected data, the categorization used for the production of sentences was slightly modified and we settled on the following factor groups:

Factor group 1: 0 - incorrect
1 - correct
Factor group 2: b - beginner
s - sophomore
a - advanced
Factor group 3: p - pronominal n - non pronominal
Factor group 4: o - full noun phrase object
v - pronominal object
r - reflexive object
x - no object
Factor group 5: g - full indirect object
c - pronominal indirect object
h - no indirect object
Factor group 6: i - one other intervening elementay
m - multiple other intervening elements
z - no other intervening element
Factor group 7: f - first try
2 - second try
3 - third try

Independently of one another, the researchers then factored the 120 sentences assigning, for example, the sentence *"daß ich gekommen bin"* the following factors p (pronominal), x (no object), h (no indirect object), i (one other intervening element). If it was followed by a C for correct it would be assigned a factor of 1, and if NC or "answer not obtained" a factor of 0. Finally the first, second, or third try would be factored in with an f, 2, or 3.

We now had for each class level a text file looking somewhat like excerpt below where many items are left out to show avariety of possibilities:

(1snxhmf 1.2 *weil Markus nicht spielen will*)
(1snxhm2 1.2 *weil Markus nicht spielen will*)
(1snxhm2 1.2 *weil Markus nicht spielen will*)
(0snxhmf 1.2 *weil Markus nicht will spielen* N)
(0snxhmf 1.2 *weil Markus will nicht spielen* N)
(0snxhmf 1.2 *weil Markus will nicht spielen* N)
(0snxhmf 1.2 *weil Markus will nicht spielen* N)
(0snxhmf 1.2 *weil Markus will spielen nicht* N)
(0snxhmf 1.2 *weil Markus will spielen nicht.* N)
****
(1snohmf 1.4 *Daß Ute ihre Hausaufgabe zu Hause gelassen hat*)
(1snohmf 1.4 *Daß Ute ihre Hausaufgabe zu Hause gelassen hat*)
(1snohmf 1.4 *Daß Ute ihre Hausaufgabe zu hause gelassen hat*)
(1snohm2 1.4 *Daß Ute ihre Hausaufgabe zu Hause gelassen hat*)
(1snohm3 1.4 *Daß Ute ihre Hausaufgabe zu Hause gelassen hat*)
(1snohm3 1.4 *Daß Ute ihre Hausaufgabe zu Hause gelassen hat*)
(0snohmf 1.4 *Daß hat ihr Hausaufgabe* N)
(0snohmf 1.4 *Daß ihre Hausafgabe Ute zu Hause gelassen hat]* N)
(0snohmf 1.4 *Daß ihre Hausaufgabe Ute hat zu Hause gelassen* N)
*****
(0snohm2 1.4 *Ute hat zu Hause gelassen ihre hausaufgaben daß* N)
(0snohm3 1.4 *Daß hat ihr Hausaufgabe* N)
(0snohm3 1.4 *Daß ihre Hausaufgabe hat Ute zu Hause gel sst* N)

These files are now fed into **VARBRUL** which actually only looks at the variables at the beginning of the sentences and supplies a numerical factor for each variable. The comparison of the factors for each level provides the researchers with indications of exactly which factors are involved in the variable acquisition of word order in dependent clauses.

CONCLUSION

This fairly detailed description of the process of development and implementation of programs for the collection of data to be used in a research project has listed various decisions that had to be made along the way and some of the pitfalls encountered. It shows that expertise in two different areas can compliment each other and lead to productive collaboration and research.[1]

ACKNOWLEDGEMENTS

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The project was funded by an institutional grant for interdepartmental research.

NOTES

[1] Dr. Barbara Fennell will be publishing the findings of the research.

PRESENTERS' BIODATA

Sofus E. Simonsen is Associate Professor of German, Executive Director FL Technology Center, and Assistant to the Dean of International Studies. He has been involved in research on and development of CAI materials since the late 70s, participated in the first FLINT seminars, and has long since been overtaken in the area of CAI by younger and brighter colleagues.

Joseph F. Steffen graduated from NCSU in 1991 with a B.S. in Engineering. He is the Managing Director of the NCSU FL Technology Center and the LAN Administrator and hardware/software consultant to the Department of Foreign Languages. Joe has programmed CAI and record collection programs in **PC-Pilot**.

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LASERDISC AND/OR CD-ROM FOR LANGUAGE LEARNING?

ALICE SLATON, VENTURA COLLEGE, AND CLAIRE SAINT-LÉON

INTRODUCTION

This presentation's goal is to clarify two very important storage media: the Laservision videodisc format and the CD-ROM. Issues will be discussed from two perspectives: as a user/language professor and a designer/developer.

Will the videodisc disappear? Is the CD-ROM king? Is video not as good as digital? Why have videodisc since we have videotape? There is no random access with video, right? How come I haven't heard much about videodiscs but now everybody wants to get a multimedia computer with a CD-ROM drive? How about the learning curve, which is easier? Which medium is better for language learning? Which is less expensive for education?

Many myths and many questions abound. The goal of this presentation is to clarify a few. We shall explain the advantages and the limitations of these media for language users and developers. We'll share the experience of developing the videodisc *Fantastique!* and the CD-ROM *What Makes the French French?*.

ANALOG VS. DIGITAL

The videodisc is an analog storage medium, the CD-ROM is a digital storage medium. They are both read only media, which means one cannot write to the disc as you would a computer diskette or a hard disk. The information on the videodisc can be seen on any TV while the information on a CD-ROM can be seen on a compatible computer monitor. There are many digital formats: CDI, DVI, DTV, etc. Digital is not digital is not digital. In this presentation, we shall only discuss the CD-ROM digital format that has become mainstream. Even then, digital is not digital is not digital.

Are Macintosh computers compatible with PCs? No. You have to have the digital software and firmware that can talk to the hardware and to the computer. There are digital CD-ROMs for the Macintosh computers and there are digital CD-ROMs for the PCs. More and more CD-ROMs are hybrids which means they can be read by both machines. *What Makes the French French?* is a hybrid CD-ROM that runs under **Windows** 3.1 on a 486 computer with 8MB of RAM, as well as on a Macintosh computer under system 7 and 8MB of RAM as well.

ADVANTAGES OF VIDEODISCS

Learning and teaching a foreign language with vivid examples of language and cultural situations are best done on videodiscs. Barcodes, support and complement the video, audio and print media to powerfully enhance the experience. Using videodiscs with barcodes is easy and economical. This was the topic of our presentation at last year's symposium. We still think so today.

Michael Bush (1991) expressed the power of video in the following way:

> Seeing and hearing "real people" speak real language is an extremely compelling and motivational experience for language learners. Furthermore, there is evidence that the inclusion of the visual element in the learning process actually improves learning outcome.

Dr. Bush goes on to say that:

> the addition of dynamic visual images makes verbally presented information easier to remember.

Indeed, we all have experienced the power of video. And videodisc content, under the accurate control of the teacher/designer, can show the language used in context whereby learning becomes experiential.

The 8" and 12" videodiscs are still today the best video quality, full screen, full motion, full color analog storage medium. They are better than VHS tape. A videodisc player and a TV monitor to display the content of the disc are all that is needed. When used with the keypad or barcodes, videodiscs systems are easy and user friendly stand alone systems. The greatest and richest asset is what is on the disc and how it is designed. Interactivity depends on the design of the content. One can access 54,000 images or 30 minutes of video motion image by image on the constant angular velocity format (CAV).

In terms of training and the learning curve for the user, it is almost none. Videodiscs range from a few dollars to a few hundred dollars. Videodisc players range from $200 to $2,000. Videodiscs, like your VCR, can be portable, and TV monitors are easily available. Thousands of movies are available on videodiscs, many of them in different languages. An NTSC Laservision videodisc will play on any NTSC Laservision videodisc player.

Using videodiscs under computer control is more complex for the developer. However, it is a configuration that can be excellent if your content and design needs are met. The addition of the computer brings a host of additional decisions to be made by the user and the developer: one or two monitors? Which platform: Macintosh, **DOS**, or **Windows**? What programs are there? Are they complete solutions? How about the cost?

That's why we favor the simpler configuration of videodisc and barcodes, as expressed in last year's CALICO Symposium presentation entitled *The Barcode Connection* (Slaton and Saint-Léon 1994).

Videodisc and barcodes are great for the beginner user because there is no learning curve and great control on the videodisc content. Videodiscs and barcodes are great for the savvy computer user who needs to design and pilot test programs. Barcodes are standardized. Sony, Pioneer, Panasonic videodisc players will play all videodiscs. Barcode systems are economical and offer instant access, accuracy, and instant replay. A reader costs $100 to $300 Unlike videotapes and audio tapes which are sequential media, videodiscs are random access media. Random access media allow the user to access a video or audio segment instantaneously and accurately. The barcode reader allows the user to replay any selection as often as needed.

DISADVANTAGES OF VIDEODISCS

The videodisc technology, a thirty-year old technology, is a mature, good technology. So why did it not become a common consumer item? There are many complex reasons why the videodisc technology stayed confined to limited fields. We can offer a few:

- Videodiscs are not all digital.
- A videodisc player is bigger than a CD-ROM player.
- The consumer preferred videotape.
- The potential user/educator was not ready for the technology.
- Marketing in the mainstream consumer market for the videodisc was not sufficient nor effective enough.
- The absence of complete and sound interactive language programs on videodisc did not help either.

For all these reasons and more, the videodisc technology was confined to the military, the industrial training sector, research institutions, and individuals. As a result, relatively few language learning and teaching interactive videodiscs programs are available.

A FEW CONSIDERATIONS FROM THE DEVELOPER'S PERSPECTIVE

There are two main analog television standards that the developer has to consider when planning a videodisc project: NTSC and PAL television standards. The NTSC standard is used today mostly in North America and the PAL standard is used in most of Europe. For example, France uses PAL and SECAM, as a matter of course.

Video and computer development are costly issues for the developer. A videodisc project is not easily updated. Costs of mastering have come down: $1,800 for the mastering and $9.50 for each disc duplicated. What is on the videodisc stays until another disc is mastered. If you only need a copy or two for testing, the cost is about $200 a copy.

THE CD-ROM

650 MB of digital programmable storage is possible on the 5¼ silver disc. It is like a huge diskette. The CD-ROM is a read only medium the same a the videodisc. Most computer stations today are multimedia capable. There are many more multimedia computers than laserdiscs players on the consumer market. Hundreds of CD-ROMs are coming out. There are a few language programs on CD-ROM such as the Berlitz' *Think and Talk* series. There are two main platforms: Macintosh and **Windows**. Most stations are now using a two-speed CD-ROM player. Most CD-ROM programs I have seen have limited video motion sequences due to storage and compression limitations. Many programs on CD-ROMs are sold from $30 to $150.

The cost of developing a CD-ROM is on top of the cost of video production, scripting, and storyboarding. Programming expertise is required. No NTSC or PAL issues since it is a digital format. However, you have to decide ahead of time which digital format you are going to develop in. Developing interactive materials for any format, even for the print format like a textbook for example, is time consuming, labor intensive and complex.

There is a consumer market for CD-ROMs because of the audio CDs overwhelming success; and digital is perceived as less expensive.

Multimedia stations are becoming mainstream and the hardware prices are dropping. The digital multimedia station offers a huge market. CD-ROM players cost from $100 to $500 for 2-speed players, internal or external. Inexpensive, would you say? No. I think that we are now more accepting of the cost of technology.

If you have CD-R for recording your CD-ROM, you can test it and debug it before sending it for duplication.

Today developers have to develop for two platforms and make sure that the compatibility issues are addressed correctly or developers risk to have disillusioned users because the CD-ROM they bought did not work with their system. Over 30% of the CD-ROMs bought during the '94 Christmas season were returned because they did not work. Developers make mistakes, they underestimate the complexities of development and cannot test all the possible computer and CD-ROM player configurations, especially for the PC. You have to abide by the minimum system requirements for both platforms. However, it is easier for the Macintosh because the Macintosh platform is more standardized. CD-ROM is today's digital format. The price of CD-R recorders range from $2,000 to $6,000.

A FEW DISADVANTAGES

Compression algorithms and storage costs for development are still problematic. Full motion, full screen video is still not quite feasible yet. Lack of standards of encoding graphics, audio, and video motion for CD-ROM are also a problem.

CONTENT, DESIGN, AND INTERACTIVITY

Sound learning theory and sound design are of course more important than hardware or media delivery decisions. We should place our focus on the content, the design of the program we want to develop or use, and how best we can use the technologies available today in order to improve our teaching and learning. What makes a program interactive is not its format but rather its design, how it communicates with the user and what the user has to do to interact with the program. We cannot read digital information without a computer. Today, we rely on technology.

FANTASTIQUE! VIDEODISC AND *WHAT MAKES THE FRENCH FRENCH?* CD-ROM

Both projects make use of personal resources and footage shot in France. In each project , a video producer/editor (for *Fantastique!*) and a programmer (for *What Makes the French French?*) assisted. For the videodisc, it took a good eight months of part-time work and a good three months for the CD-ROM. For the videodisc project, the footage complements the lesson design. For the CD-ROM project, the audio script inspires the design of the originals. For *Fantastique!* the project was done on ¾ inch tape, sent to be improved to 1" tape, and then mastered by Pioneer. In the case of the CD-ROM, we programmed on a Macintosh computer, in **Macromedia Director**, using Apple's **Quicktime** and compressed the footage using the "video" compression algorithm. It is not top notch, but it was adequate for our needs and time frame.

Notice the size of the video movies; Only a few movies have been chosen to be included on the CD-ROM and they are all short, each under a couple of minutes. When we had finished the programming, the programmer had to set up the files for the PC format. I only wanted one copy on CD-ROM, the programmer had a CD-R. It took a couple of hours to do the recording *et Voilà*! Recording a CD-ROM can be tricky. You cannot have any electronic or electrical interruptions during the session otherwise you have to start over. This is because a CD-ROM has to be encoded on a continuous speed, continuous linear velocity (CLV) format.

COLLABORATIVE EFFORTS

Cooperation and partnerships are the keys to success for developers and users. Many companies are merging. Additionally, many companies such as Macromedia and Corel are selling their programs royalty free; they see the value in availing their programs rather than placing barriers. That's great.

CONCLUSION

The videodisc is yesterday's and today's analog format. In terms of ease of use and compelling contextual learning, the videodisc is still the best. I am to the videodisc! The videodisc technology is a good and mature technology. Ten or fifteen years ago, there was some confusion about the Laservision format and the RCA stylus format. The timing was bad for the videodisc. I believe that the educational community and the consumers were not ready to accept and learn how to use that technology. It was not just a question of cost and quality. The timing was bad.

And now, will all information go digital? Is digital the best format? Is digital the most cost effective? No. Let's not get carried away and believe that all information is going to be digital. Even today, paper and books are still the best portable and random access media. A paper document for many of us, is still more trusted and more final that its digital counterpart. Paper products are easy to use, mobile, readable and accessible in terms of cost and availability.

As mentioned, there are format, standards, and compression problems. But the perception is that digital is better than analog. If we had analog computers or holographic computers then storage would be on holographic discs or analog discs!

The timing for the CD-ROM is excellent since it is following the footsteps of the success of the audio CD. The standards and compatibility problems are getting solved. The numbers are in favor of the CD-ROM. Hybrid CD-ROMs are more and more common. The consumer, the educational community, and the business community are readier to recognize and learn how to use multimedia technology. The costs are falling and everyone acknowledges that technology is a must for teaching and learning.

What are language teachers to do with all that technology and the continuous changes that are inevitable? Should we just wait and not get involved until things settle down? No. Technology will continue to evolve. We, as educators and users must get involved. The real winners are the people who are savvy enough to watch the convergence of information technologies and respond in their own field of expertise. Today we have to learn for a living.

The delivery media will become transparent, we will be able to communicate from any location and technology will be wired and wireless. We will communicate, learn, and teach from home, school, office, classroom, car. We will shop, play, socialize, and work also from home, school, office, and car — worldwide. Aren't we starting to do that already?

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PRESENTERS' BIODATA

Alice Slaton, French Professor at Ventura College, has produced videodiscs, manuals (*Interactions Audio-Visuelles, Flash Télévisé*, and *Fantastique!*), and barcode instruction to facilitate the use of videodiscs for language students and teachers. She is currently designing a CD-ROM entitled *What makes the French French?*

Claire Saint-Léon, Ph.D. (UCLA), has taught French at UCLA, Tennessee Technological University, and the United States Naval Academy. She has been working on interactive video for the teaching of French language and culture for the past ten years. She has made presentations at the Northeast, AATF, ACTFL, SALT, Journal du Multimedia, and CALICO conferences and published the corresponding articles. She now lives in Paris where she is serving as a correspondent on multimedia for CALICO.

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SHARING HYPERMEDIA TOOLS AND RESOURCES FOR LANGUAGE TEACHERS: *STACK NETWORK PROJECT* CD-ROM

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ABSTRACT

The *Stack Network Project* is promoted by the presenters to make hypermedia tools and resources including digital movie clips available for language teachers. This project has produced several **HyperCard** based programs, and most of them have been printed on CD-ROM. From this CD-ROM, **HyperLibrary** for reading, **HyperComp** for writing, and **QuickDialog** for listening and speaking will be demonstrated.

HyperLibrary provides a hypertext type reading environment with on-line references. **HyperComp** is created for students to write compositions based on the topics presented in the form of animation. The writing process is automatically recorded. With **QuickDialog**, students learn typical situational expressions through role playing activities utilizing digital movie clips.

THE STACK NETWORK PROJECT CD-ROM

The Stack Network Project

The presenters have been working on the promotion of the *Stack Network Project* since 1989. Through this project several **HyperCard** based programs have been created, such as **HyperLibrary**, **HyperComp**, **QuickDialog**, **Post Office Stack**, **HyperPictureDictionary**, **HyperDictation**, **Read'n'Writer**, **HyperJP**, **Dental J-E Kaiwa**. All of these are intended to accelerate foreign language learning not by mechanical drill or pattern practices, but by motivated, interactive activities.

The project has been trying to share 1) hypermedia tools, 2) resources and 3) information among foreign language teachers. The hypermedia tools and resources are embodied in the **HyperCard** based programs. For example, instructors can create their own hypermedia reading materials with **HyperLibrary**, and at the same time they can use the reference modules in the **HyperLibrary** automatically. In other words, they can use tools and resources to create their own materials. This project has established its own mailing list service on the Internet for the last two years in order to provide the latest information and to share ideas concerning CALL.

THE CD-ROM

All of the stacks the *Stack Network Project* has produced, as well as the papers concerning these stacks, have been compiled and pressed onto one CD-ROM, and distributed for research and educational purposes based on the spirit of the project. The CD-ROM also includes a collection of short **QuickTime** digitized movies which language teachers and researchers can use freely to make their own hypermedia materials.

Three Stacks

Among the stacks stored on The *Stack Network Project* CD-ROM, three major CALL materials, **HyperLibrary**, **HyperComp**, **QuickDialog**, will be explained in detail.

HyperLibrary

The program, **HyperLibrary**, consists of three major modules: Librarian, Reading Stack, and References. The Librarian module shows the index card catalog which readers can use to find the reading materials. The Reading Stack module provides reading materials on screen. While reading texts, students are allowed to access dictionaries and reference books on the same screen, both of which together constitute the References module.

The first module, Librarian, has the library index card catalog which is technically regarded as a database of the reading materials in the Reading Stack module. New cards can be added to the catalog by instructors without any difficulties.

The Reading Stack module is the main part of this program. **HyperLibrary** has two reading materials as examples. Each card has its title on the first line, and on the second line the key words of the unit are listed. Then comes the body of the text. Selecting a key word automatically leads to another text which has the same key word. Readers can continue to read on the same topic as long as they like, or can quit reading on one topic and begin to read on another at any point. What to read next is decided by the readers based on their interests. Thus, the process of interactive reading can be embodied in reading materials effectively using hypertext. **HyperLibrary** Toolkit is provided for instructors to create new reading materials.

The third module, References, can be accessed from the Reading Stack screen. When the reader finds an unknown word in the reading materials, clicking on the word brings the necessary information automatically on screen. Thus, the simultaneous interactive process between the necessary vocabulary information and the reader's background knowledge of vocabulary can be realized. The English-Japanese dictionary available here is a separate commercial program. We made this commercial program accessible from **HyperLibrary** so that it may work like a part of the **HyperLibrary** program. The English Lexicon, however, is not a commercial program, and so users can add or customize it freely. The other part of the References module consists of two reference book components, Paragraph Book and Picture Book. The Picture Book is a collection of illustrations for the reading materials. The Paragraph Book is provided for the readers to study the principles of the organization of paragraphs and reading strategies.

Lastly, **HyperLibrary** is programmed so that the history of what the users have done, the log, is automatically recorded in a special file. **HyperLibrary** is operated by means of using a mouse to select an object, like a button, an unknown word, or a key word, on screen. The program traces every selection and records the time when it is made.

HyperComp

HyperComp is a **HyperCard** based program which consists of three modules: *E-shibai*, Phrase Book, and Writing Pad. While looking at a series of pictures in *E-shibai*, learners create a composition in the **WritingPad**. They can choose from a variety of rhetorical patterns. When students are stuck or need help, they can get it from the Phrase Book.

WritingPad looks like a simple word processing program. As they write, **WritingPad** records their writing process automatically. From the recorded writing process, the teacher can analyze the process of writing, as well as the finished product.

The *E-shibai* provides materials for the students to write about. Instructors can create a series of pictures which they want their students to write about. The series of pictures can be made to prompt the writer to write using a certain rhetorical pattern, such as comparison-contrast, or narrative. Buttons are included in the pictures so students can learn the vocabulary by clicking the object.

Phrase Book is a reference book on the *E-shibai* screen with which learners can get information about the strategies of composition and important phrases they can use in their composition. Instructors can add new cards to suit their own courses.

QuickDialog

With **QuickDialog**, students learn typical situational spoken expressions by emulating conversations with digitized movies. **QuickDialog** works with two other supporting modules: DialogPlayer and Conversation Book. These three modules are mutually connected to each other and work seamlessly. The current version of **QuickDialog** includes ten situations, and each situation has both formal and informal ones.

First, clicking on one of the situations on the table of content card brings learners to the relevant card of the situation, where learners practice role playing on the screen. The learners talk with the conversation partner on the dialog practice card, which appears in the large, upper left window on the card. The alternative responding utterances are represented in the form of movie clips arranged at the bottom part of the card. Learners are supposed to study the possible utterances by clicking the movie clips. After checking all of the possible utterances, learners have

to choose one of them as the most appropriate response to the utterance given by the conversation partner. Clicking the button next to the movie clip makes the movie clip come into the upper right big window to correspond to the utterance. If the selected utterance is appropriate, the partner gives the next utterance which corresponds to the utterance the learners have given. Now it is the learners' turn to choose the next appropriate utterance from the movie clips below. If the learners make a mistake, the party of the conversation responds by saying "Pardon?" with a frowning face, where the learners have to choose the best alternative again. The learners can also, however, choose the phrase "Pardon?" among the six alternatives. In this case, the conversation partner repeats what was said before so that the learner can listen again.

The button called ModelDialog in the upper right corner of the **QuickDialog** conversation card changes the screen into the module called DialogPlayer with which the learners can take a look at the conversation they have gone through. DialogPlayer consists of two parts: one is to provide the dialog movie clip from the third person's point of view with its script alongside, and the other is a series of explanations for each utterance.

The Conversation Book is a hypertext type reference module, where learners find important grammatical and pragmatic information from the communicative point of view, such as the relationship between polite expressions and subjunctive mood, with some example sentences. Some of the example sentences are underlined, which means these are "hot text" linked to the movie clip which "demonstrates" the example sentence in the form of digitized movie with sound. The keywords on each card within this module are also interlinked with each other so that the relevant explanations are looked up one after another.

Within the **QuickDialog** modules, relevant textual expressions, explanations by texts, and movie representations of the expressions are linked to each other regardless of the kind of information, which is called hypermedia. From the point of learning activities, the **QuickDialog** is considered to be epoch making, since the pieces of materials play different roles depending on the directions of the information linkage. For example, the explanation cards for individual expressions with the movie clips are regarded to constitute a supporting constituent for DialogPlayer module. From the dialog presentation card of the DialogPlayer, learners can choose particular expressions among the script and study them analytically on the explanation cards. On the other hand, the same explanation cards for the individual expressions can be used as the authentic contextualized examples of the expressions corresponding to the example textual expressions found on the Conversation Book. When the linkage begins from the Conversation Book, the starting point is one of the isolated textual example expressions, and from that expression, the information linkage is made to the contextualized movie on the explanation cards. From that individual movie clip, learners, in turn, can come to see the whole scene of the dialog which includes the movie as a part of the exchanged expressions. This direction of linkage can be called synthetic.

FOR THE PROSPECTIVE FUTURE

The *Stack Network Project* has two concrete plans now. The first one is to create a hypermedia concordance called **Quick-KWIC-Dialog**. This is a **QuickTime** movie concordance in KWIC format. A thirty minute digitized movie is to be used as the source for retrieving the keywords and the scenes including the keywords will be shown successively on the screen. This will revolutionize the study of discourse for researchers as well as learners. The second plan is to create on-line hypermedia language learning materials which work on the Internet. This will be created as HTML resources which are stored on WWW servers and retrieved from all over the world.

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PRESENTERS' BIODATA

Masatoshi Sugiura, an Associate Professor at Nagoya University, Japan, has created hypermedia programs including **HyperLibrary**, **HyperComp**, **QuickDialog**, **HyperPictureDictionary**, **HyperDictation**, and HyperJP. He is the cofounder of Hypermedia Works Group, Japan. EFL, text processing workshop, and language acquisition theory are among the courses he has taught.

Shuji Ozeki, an Associate Professor at Chubu University, Japan, has created hypermedia programs including **HyperLibrary**, **HyperComp**, **QuickDialog**, and **WritingPad**. He is the cofounder of Hypermedia Works Group, Japan, and the moderator of the mailing list. EFL, linguistics, natural language processing are among the courses he has taught.

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INTERNET: THE ULTIMATE COLLABORATIVE LEARNING ENVIRONMENT

LT. COL. RICHARD SUTHERLAND, UNITED STATES AIR FORCE ACADEMY
KEITH ANDERSON, ST. OLAF COLLEGE, AND DONNA VAN HANDLE, MOUNT HOLYOKE COLLEGE

With a national and international scope, Internet offers opportunities superbly suited for cooperative learning. This presentation describes a project, which began as a simple effort to provide German teachers access to an ftp site, but has become an informal consortium supported by educators and administrators at institutions throughout the USA and the Federal Republic of Germany. An initial goal of producing a database of graphics by recycling 35mm slides (i.e., updating the descriptions of slide/tape packages produced before the fall of the Berlin Wall) has expanded into an on-line commemoration of the fifth anniversary of German Reunification. In support of this activity, the German Information Center is receiving materials from official archives that will include cities in every German state as well as information on the national government. These resources will be digitized and made available to users worldwide via Internet. In addition, study guides together with lessons plans are being produced that refer to these electronic databases. Moreover, teachers and students are working together across countries and continents as the Internet is rapidly becoming the ultimate collaborative environment.

This presentation describes the German Internet Project (GIP), which furnishes a paradigm for national and international cooperation that could be extended to other languages and result in a cornucopia of quality materials available electronically with the potential of revolutionizing language learning worldwide.

The German Internet Project consists of an informal consortium of dedicated educators and administrators, who are donating their talents and the resources of their respective institutions to make quality German materials available to users globally. This consortium is collaborating closely with several German organizations that are supplying quality materials (e.g., publications, slides, transparencies) and giving permission to have these digitized for storage and dissemination via the information superhighway.

A key figure in this effort is Dr. Anderson, current President of the American Association of Teachers of German (AATG), at St. Olaf College. Here, he has established a home page organizing disparate German resources on the World Wide Web (WWW) (http://www.stolaf.edu/stolaf/depts/aatg/). The comprehensiveness and accuracy of this home page is enhanced by the subscribers to the AATG listserve, who assiduously scour the WWW for applicable sources and provide ongoing feedback. At the University of North Carolina, Greensboro, Dr. Lixl-Purcell has generated home pages for German as well as Russian, and has begun to produce an Electronic Syllabus (ES) containing lessons based on WWW-resources (http://www.uncg.edu/~lixlpurc/german.html). Educators can forward relevant portions of the ES to their students via e-mail, who then access the archives on the WWW. For example, students enter a Uniform Resource Locator (URL) that takes them to a selection German cities, where they electronically tour and report on the city of their choice. Dr. Lixl-Purcell has also created several on-line tutorials that provide a surperb introduction to the Internet for language teachers. For those interested in becoming familiar with what the WWW has to offer, these tutorials demonstrate an excellent point (http://www.uncg.edu:80/~lixlpurc/)

German organizations are actively supporting the GIP. From the German Information Center in New York, Dr. Behr regularly sends publications in digital form (*The Week in Germany, Deutschland Nachrichten*, etc.) to Dr. Smith, who has established an ftp site at the University of Texas, Arlington, where these documents are stored and disseminated (http://langlab.uta.edu). Similarly, Ms. Mueller at Inter Nationes in Bonn has given permission to Dr. Sutherland at the United States Air Force Academy

(USAFA) to digitize several sets of transparencies (*Transparente Landeskunde, Uebersichten, Klarsicht*). These graphics will be downloaded by Mr. Foelsche (Director, Humanities Resources and Moderator of the outstanding Language Learning and Technology International listserve) at Dartmouth and stored at an ftp site there (ftp://ftp.dartmouth/pub/llti-iall/). Additionally, Dr. Ortmann of the Goethe Institute in Munich, Germany, has granted Dr. Sutherland authorization to make the database, *Deutsch Als Fremdsprache*, available via ftp to users worldwide (ftp://ftp.usafa.af.mil).

Furthermore, Dr. Behr is having slides/photographs of German cities sent to USAFA, where they will be digitized in preparation for the celebration of the fifth anniversary of German Reunification this fall. The remarkable success of the GIP has led to higher level contacts with the German government, and correspondence has been sent to Dr. Beerwerth in the German Foreign Office to discuss future projects (e.g., a digital House of German History) that would place even more archives at the electronic disposal of global users.

In like fashion in the U.S., the GIP has been submitted to the Center for the Advance of Language Learning (CALL) as paradigm for international cooperation that should be extended to other languages of interest to government agencies. CALL support of similar efforts with other languages could herald a new era of civilian-government collaboration as well as international cooperation. The common aspiration would be easy access to quality materials for all — a noble goal appropriate for our new "Information Age."

The delivery of this presentation could be accomplished via an Internet connection (SLIP) established through an 800 number. Many educators are astonished to learn how inexpensive and simple such a service can be: less than $500 a year (when used judiciously) for a number that all faculty members in a school can use and that is accessible through most phone jacks to almost any computer with a modem. Furthermore, software packages like Mosaic or Netscape provide a graphical interface to the WWW. Their use is amazingly intuitive to beginners and will make those first forays into the electronic wilderness a positive experience.

Although browsers like Mosaic or Netscape provide friendly access to Internet via the WWW, their hardware (at minimum, a 14,400 modem and eight megabytes of RAM) and connection requirements (SLIP or point to point protocol) may be out of reach for many educators. As a consequence, an architecture has been devised that takes advantage of the ease of WWW browsers, yet is available to those with modest capabilities (e.g., 2,400 modem, dial-in connection.) For example, Dr. Sutherland (USAFA) and Dr. Van Handle (Mount Holyoke) are conducting a collaborative project between their respective institutions using an ftp server that is accessible via the WWW. Subdirectories have been created that contain student input on course topics of mutual interest (e.g., personal descriptions, foreigners in Germany, equal rights). In the personal description directory, there is a graphic of all class members (i.e., a class picture) as well as short vitae of each class member identified only by first name to protect privacy of participants from unkind cruisers of cyberspace (ftp://ftp.usafa.af.mil/language/german/g223). In similar fashion, the other subdirectories contain student input on respective topics.

Such an architecture has several advantages. By simply clicking with a mouse, Web users can see with whom they are communicating and find out about their counterparts background and views on interesting issues. Those with less sophisticated connections can have the same information by downloading and displaying or printing out appropriate documents. Perhaps, the greatest positive aspect for Web users is that placing an ftp server on the WWW makes it unnecessary to create homepages. Although many intrepid Interneters find homepage production actually enjoyable, the task is still a form of programming with syntax, etc. In contrast, merely putting documents into a subdirectory becomes the equivalent of an instant homepage, a great relief for harried educators. Students turn in assignments by copying them to a subdirectory on the local area network. An instructor can then access this subdirectory and (after appropriate review/editing) transfer the files *en masse* to the designated subdirectory of the ftp server, where they are instantly organized and made available by the WWW itself. This configuration takes advantage of the friendliness of Web browsers, yet is still accessible to those with only an ftp capability.

In sum, the GIP offers a paradigm of cooperation and collaboration. Educators and administrators from widely varying organizations across the country and in Germany are working together to make archives available digitally to users worldwide. In like manner, study guides and lessons are being generated that refer to these electronic databases, thereby creating unique opportunities together with ease of access and communication. Architectures are being

employed that take advantage of the friendliness of the WWW while still furnishing the same content to other Internet users. Finally, classes from institutions as disparate as a military academy (USAFA) and a women's college (Mount Holyoke) are meeting in cyberspace and sharing perspectives as Internet becomes the ultimate environment for collaborative learning.

PRESENTERS' BIODATA

Lt. Col. Sutherland has written several articles, held numerous workshops, and presented frequently on the integration of technology into foreign language learning centers and classrooms. In 1991, he received his Ph.D. at Utah State University, where he was honored as the "Outstanding Ph.D. scholar in Instructional Technology." Currently, he is Director of Research in the Department of Foreign Languages at the United States Air Force Academy and helping to make language files and courseware available worldwide via Internet.

Keith O. Anderson is Professor of German at St. Olaf College, Northfield, Minnesota. He holds a Ph.D. in German from the University of Colorado. His teaching specializations are applied linguistics and foreign language acquisition, and his research interests include experimental phonetics and German dialectology. In 1995, he will complete a two-year term as President of the American Association of Teachers of German. He does Macintosh laserdisc programming with the **Libra** authoring system, and manages the World Wide Web home page of the AATG.

Donna Van Handle is a Lecturer in German at Mount Holyoke College, South Hadley, Massachussets and a member of the Executive Council of the American Association of Teachers of German (AATG). Her research interests include contemporary German and Austrian *Landeskunde* and literature, second language acquisition, CALL, and multimedia applications in FL teaching.

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CREATING A DIGITAL LANGUAGE LEARNING LAB

RODNEY TAMBLYN, UNIVERSITY OF OTAGO – NEW ZEALAND

ABSTRACT

In 1992 the Language Learning Center was at a cross roads: aging tape laboratories in need of urgent replacement, with the only "off the shelf" replacement options coming from the traditional suppliers. The cost of installing such labs would prevent purchase of computer equipment, thereby "locking in" tape based lab programs for the next decade, by which stage it is fair to assume tape labs will be obsolete.

My brief, as the CALL consultant, was to design a computer based language lab that would provide the same level of functionality as a traditional lab, make available high quality audio at student positions, and provide the benefits of access to the widening body of CALL programs. It rapidly became obvious that we would need to develop the software and hardware to meet the above requirements ourselves. An AV distribution system was developed by the university electronics workshop which provides the audio headset interface at student positions, communications between teacher and student, audio conferencing, and distribution of audio and video sources to lab positions (with live video being displayed on student computer screens).

In parallel with the hardware development a major software development program was undertaken, including:

1. Network server "hub" software. Uses low level network protocols to maintain connections to all computers, the hub software controls aspects of the class environment (e.g. remotely opening and closing applications on student computers, sending files to students etc.). Controls audio/video distribution hardware systems.

2. Conversion software enables source materials (audio, video, photographs, print) to be digitized for access by the computer. Optimizes storage of digital files through an innovative compression approach.

3. Lesson creation software enables teachers to assemble converted files into digitized lessons.

4. Student playback software provides "playback" access to digital lessons at student stations, allowing students to link to other programs and to add items (words, exercises, etc.) to their own personal review list for later revision. Allows students to record (in 16 bit sound, voice activated) their voice and compare resultant file with examples.

5. Teacher software provides class control, allowing the teacher to listen/talk to individual students, distribute audio/video to individuals or groups, send files to students, listen to sound files recorded by student, and view summary of student activities in current term (attendance, review lists, etc.). The teacher display shows students logged on, active groups, and students "calling" the teacher. Multiple teacher positions are possible.

6. Administrative software provides a variety of functions, including scheduling of classes, generation of student/class usage statistics, and authoring programs permitted to run on student computers.

My presentation will elaborate on the software and hardware outlined, comment on pedagogical and design issues, and outline the use and performance of the system to date.

PRESENTER'S BIODATA

Rodney Tamblyn is the CALL consultant at Otago University. Since taking up this position in 1992 he has been responsible for encouraging and expanding the use of CALL in language teaching and learning at Otago, and for the development of a number of "stand alone" CALL programs. Over the last year his major work has been the establishment of two computer-based language laboratories, a project which has involved extensive research and development, and close collaboration with programmers, architects, administrators and student assistants. The new laboratories, based around 52 660AV Macintosh computers, opened for use in October 1994.

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WORD PROCESSING AND LANGUAGE ASSISTANT SOFTWARE: REEVALUATION OF OLD TOOLS TO EMPOWER THE STUDENT

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ABSTRACT

This paper explores practical methods of using commercial software — **WordPerfect** and Microtac Software's **Language Assistant** programs — to develop overall language facility, and writing proficiency in particular. Because these programs are powerful, they can intimidate and frustrate students. Our experience suggests that the software becomes a natural and successful aid when the language teacher is an integral part of the whole learning process, stressing computer skills as well as language use and understanding, and helping the student make intelligent choices.

I fully understand the enthusiasm with which some greet and champion **Systèm-D**, a writing program with lexical and grammar aids for French students. Our brief experience with **Systèm-D** revealed the obvious: in the hands of a competent and enthusiastic teacher, it is a valuable tool; in less skilled hands, its usefulness is limited. However, it was only when I attended one of Virginia Scott's workshops that I came to really understand what a powerful device it can be in the proper hands. As she discussed how she uses the software with the students over the course of several semesters, how she teaches them to explore its features through game-like learning strategies, how she carefully and consistently cultivates good writing principles, some fundamental deficiencies in the procedures used at my institution became clear. Our flirtation with **Systèm-D**, as well as our whole approach to foreign language word processing, suffered because we stressed the final product too much and neglected both the learning process and the equipment.

The original funding for our new language lab did not include computers, and our decision to purchase thirty student work stations and a file server really cut the budget close. Consequently, most of the software we use consists of publisher's ancillary software, software developed by and for the University LAN, and other "freebies." However, we were agreed on the importance of word processing, and our earliest purchases included **WordPerfect**, the University standard, along with language modules for Spanish, French, German, Italian, and Russian. After some negotiation with Microtac Software and a trial period, we also bought the Spanish, French, German and Italian Assistant programs. This was, and remains, the core of our word processing program. At first, word processing was reserved for faculty and a few upper division courses; only gradually have we introduced its use into some lower division courses. Whether we will ultimately purchase **Systèm-D** as ancillary software is undecided; not least among the considerations will be cost effectiveness. Regardless, some reconsideration shows how we can accomplish similar goals with the software we have.

As a full-blown word processing package, **WordPerfect** offers users many features. Especially important for our language student are the ability to access and display the foreign language characters, the spell checker and, for advanced students, the thesaurus. As a teacher I like many things about **WordPerfect**. I can create assignments for students with it, leave them for the students to complete, edit them with suggestions for improvements and ask students to rewrite knowing that they are concentrating on the essentials, not on needless retyping. And I like the spell checker. Some colleagues protest that its use will lead to even poorer spelling on the part of students. I find its use accomplishes two worthy goals: it makes students aware of lexical principles and it saves paper. I will not attempt to describe all the word processing features in detail; they are known to most of us in one form or another. The point I want to stress is that the sheer power and versatility of a word processor's features are not enough to guarantee that students can and will use it to produce successful papers.

The Language Assistant programs are translation aids. Each package has two executable files. One is translation software; the other has various tools. The translation program has a word processor and calls the tools as needed. We do not use this part of the program; however, I believe that translation aids will increasingly impact us both as teachers and users. As they become more and more sophisticated, they will enable students to master authentic materials at earlier stages. We should know about and understand this technology in order to familiarize our students with it and to present its advantages and limitations; in short, to deal with them use them realistically and intelligently in our teaching.

The software tools can be used alone, that is, as an auxiliary program with other word processing software. One first loads the tools into computer memory and then activates the word processor in the usual manner. As need arises, a couple of key strokes bring the **Language Assistant**'s main menu, which offers several grammatical and lexical aids. German has one choice more than Spanish, French, and Italian; they are German, English, Verbs, Decline, Topics, Accents, HotKeys, and Unload. The options **German** and **English** bring dictionary assistance. **Verbs** calls complete conjugation tables for all tenses and persons; **Decline** performs a similar function for nouns. **Topics** provides grammatical explanations and charts for some 60 subjects, ranging from adjective comparisons and declensions to word order. **Accents** forms foreign language characters easily. **HotKeys** accesses menu items directly. For instance, if one presses Alt-E while the cursor is on the word *exercise*, the following five equivalents appear: Noun: *Übung(f)* Noun: (carrying out) *Ausübung(f)*, Noun: (physical) *Bewegung(f)* Verb: *üben* and *bewegen*. **Unload** will not respond until one has left the word processing program; it then unloads the German Assistant from memory.

Together, **WordPerfect** and **Language Assistant** offer many features to facilitate the creation and editing of documents. The question is where and how to use them to promote language learning. Before making some suggestions about how these programs can be used, I would like to say a few words about the general approach. It is probably natural to want to ignore the operation of the computer and the intricacies of using the software, and concentrate our energies on the essay or whatever our students are asked to produce. Natural, perhaps, but a mistake. I am both a teacher and a lab director, and in this latter capacity, I spend a lot of time in the lab, where the staff and I must repeatedly assist confused students, who are trying to deal with the technical aspects of the computers and who sometimes have only a vague understanding of the assignment and how to accomplish it. This situation should be avoided even when simple software is involved; it is worse when using powerful programs like **WordPerfect**. Indeed, the very power of these programs makes them complex and, therefore, difficult; frustration from using the software may well translate into dissatisfaction and dislike of learning and using the language. A good solution in my opinion is to have the teacher familiarize the student with the procedures. This can be accomplished quite easily — and largely in the target language. We simply tell the students what it is we want them to do, and then show them how to do it, repeatedly, if necessary. Our presence in the lab benefits the students; and we, in turn, gain a more realistic idea of what the students can produce in a given time period.

The foreign language professor at our University who chooses to incorporate word processing into the curriculum is fortunate in having a departmentally administered Media Center, with a language lab and the above mentioned networked PC's. The only requirement for receiving class access to the computers is for the teachers to accompany their class to the Center, where they are expected to introduce the software and acquaint students with their rights and responsibilities. Students may return and use the facility at any time, provided that not all computers are being used for a class. The fact that teachers introduce their students to the software, combined with a helpful and well trained group of student assistants, does a lot to establish a comfortable environment for students.

However, this is still not enough. The reassuring presence of the teacher is required on a regular basis, explaining, helping, demonstrating that we can make the computer do what we want. Remember, even help menus may confuse novices. We can build confidence and overcome the view that language learning has nothing to do with technology by using computer terms naturally. We can greatly reduce frustration by helping students understand such seemingly simple procedures as formatting disks, opening, retrieving and saving files. These and more complicated procedures such as how to print over a network or submit files electronically must be practiced repeatedly if we expect our students to feel comfortable at the computer. We must proceed step-by-step, just as we would in language acquisition; the student must master the skill.

I begin familiarizing my students with **WordPerfect** and the **German Assistant** tools early, usually in the first semester. By the time we are ready to begin, the students have already been to the Center several times and have used the computers with the software accompanying their textbook. The students and I work together. My work is projected onto a large screen, enabling students to proceed along with me. We first select the network printer and access **WordPerfect**. After asking them to type their names, then the date in German, I watch while they react puzzled. Then I show them how to let the computer do this: change the "language" to DE (Deutsch) and press Shift-F5 (date). Next they have to type in a short exercise from the textbook, which in turn requires learning how to make the characters ä, ö, ü, and ß. We run Spell Check; then we save the file and print it — which requires selecting the (type of) printer from within **WordPerfect**. I explain that this is necessary to print foreign characters and that, if they later use other computer labs at the university and the characters don't print, this is why.

For many students, the above procedure represents a lot of new things; therefore the follow-up trip to the computer lab is basically a repeat of the above steps. We will, however, load the tools from **German Assistant** into memory beforehand so that we can use them to make the German characters more easily. Later we will use the verb charts to check conjugated forms. When students' reactions betray that they have discovered the dictionaries, I tell them it's all right to use them, but only to check for words they know already.

By the second semester we move to more complicated and rewarding tasks. After practicing vocabulary in class, I pair the students in the audio lab and have them interview their partner. A recent topic was "What did you do when you were 12 years old?" Following the interview, the students were to write up the interview on the computer and submit both a print out and a copy of the file. I try to use the computer to reinforce what we have already learned in class, not to introduce new grammatical material. It can, however, be used effectively to prepare students for other activities. For instance, I used it recently to reinforce past tense forms and prepare students for a reading selection on *The Pied Piper*. Showing slides of Hameln, the city where the incident occurred, I spoke of the lovely setting, the old, half-timbered houses, and, turning the conversation to the Middle Ages with the often unsanitary conditions and the accompanying rats, I told the story of the piper, emphasizing the past tense forms. Afterwards, I had them retrieve a prepared file containing ten sentences — main points of the story. However, the sentences contained infinitives rather the past tense verb forms, and they were arranged in random order. The exercise had three parts: I. supply the correct verb form, consulting the conjugation charts as necessary, II. copy the sentences and arrange them in logical order (this was the new computer skill), and III. answer five questions based on the reading in the textbook. Most students had no difficulty completing the assignment before class was over, even though the reading selection was new.

Our most useful function as teachers should be to help students learn to make intelligent choices. That is one of the reasons I like **WordPerfect**'s Spell Check feature. Besides catching many typos, it forces decisions. Since it is based on lexical principles rather than morphology, the student must learn that just because a word or a particular form of it is not listed does not mean that the spelling is not correct. And, as lab director concerned with cost, I cherish and encourage the use of money saving practices: running Spell Check, using single spacing for first drafts, and viewing a document before printing.

The dictionary features also force choices. Rather than forbid their use, we must teach students to make good choices. Recently, I worked with my second semester class to help break down German words into more manageable units. I played a video from the closing minutes of a German television day, with the National Anthem and showing the island Helgoland where Hoffmann von Fallersleben wrote the poem "Das Lied der Deutschen" in 1841. Then I gave the students a file with the last stanza of the poem, the one used for the anthem:

Einigkeit und Recht und Freiheit
Für das deutsche Vaterland!
Danach laßt uns alle streben
Brüderlich mit Herz und Hand!
Einigkeit und Recht und Freiheit
Sind des Glückes Unterpfand;
Blüh im Glanze dieses Glückes,
Blühe, deutsches Vaterland!

The students were to understand the words, consulting the dictionary as needed; I did not further specify how this was to be done. Some translated; some prepared vocabulary lists. The selection contains only 36 words, but forces many choices. *Recht* (capitalized) can mean *right* or (system of) *law*; students who type in the word with a small letter see it listed as an adjective. The line "*Danach laßt uns alle streben*" contains several problems. *Danach* is not listed in the

dictionary, and students must figure out that *nach* is part of the verbal expression *streben nach*, meaning *strive for*. *Laßt* is listed as *Last*, a feminine noun; students must realize that it is a conjugated form of the verb *lassen*. They can only find *Glückes* by checking under *Glück*, and then they must choose between the meanings *luck* and *happiness*. Most performed well. Here is one student's vocabulary list:

Wortschatz:

1. *Einigkeit*- unity
2. *Freiheit*- liberty
3. *laßt*- to permit
4. *streben*- strive
5. *Brüderlich*- brotherly
6. *Herz*- heart
7. *Glückes*- happiness
8. *Unterpfand*- pledge
9. *Glanze*- splendor

I believe assignments such as this one elicit interest by combining various media, by including the teacher as collaborator and mediator, by treating the computer as a natural component of the learning environment, and by getting students to use grammatical and lexical tools in pursuit of their goals.

Our experience indicates that one can introduce students successfully to complicated programs in the early stages of language study. A carefully coordinated program emphasizing writing skills over several semesters, such as the one Ms. Scott supervises, would benefit our efforts greatly. Still, our logs show constant increase in computer usage. And a stroll among the students doing computer assignments in our lab provides convincing evidence that the experience is enjoyable. Once students have discovered how valuable the computer can be in the language learning and creation process, they become avid users.

PRESENTER'S BIODATA

Finley M. Taylor is a Professor of German at the University of Central Florida. He has followed the development of CAI since the 1970s and introduced the use of computer software for foreign language instruction at UCF in 1988. Since then he has guided the Department of Foreign Languages and Literatures in the selection and installation of equipment for the Language Media Center, which he directs. His teaching and developmental facility includes a SONY LLC9000 and networked computer stations with connections to the student LAN and Internet.

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COLLABORATIVE CALL COURSEWARE DEVELOPMENT: STRATEGIES FOR AVOIDING THE PITFALLS

THOMAS THIBEAULT, SOUTHERN ILLINOIS UNIVERSITY

ABSTRACT

This presentation deals with computer assisted language learning (CALL) courseware development involving the efforts of more than one individual. Such projects are subject to the dangers of poor communication and disorganization resulting in inefficient use of time and duplication of effort. In addition, many courseware projects lack the full implementation of sound instructional design, thus resulting in a project that does not make full use of the potential of instructional technology.

The presenter will discuss strategies for promoting effective communication, distributing responsibilities, and ensuring the implementation of sound pedagogical practices when working collaboratively to produce CALL materials. A computerized organizational and development program (**ProtoCALL**) based on the IDI instructional model will be demonstrated as one way to ensure that pitfalls common to collaborative efforts are avoided.

ProtoCALL is designed specifically for CALL courseware development and addresses issues unique to foreign language instruction as well as computer assisted instruction (CAI).

Many of these points are forgotten in the design of the program. For example, on the technical side there are programs which require the input of special diacritical marks but have no help feature showing how to do this. There are also programs that contain digitized sound but offer no option for adjusting volume. On the pedagogical side some programs are strictly linear in nature and simply mimic static media such as textbooks and other programs do not offer an evaluation of the student's performance. **ProtoCALL** requires developers to address these issues point by point before actual construction of the program begins. It also allows all members of the development team to update information and record progress in a dynamic manner. The computerize format allows this information to be transferred easily by network or by diskette duplication.

PRESENTER'S BIODATA

Thomas Thibeault received his Ph.D. at the Universität Salzburg, Germany in the area of computer assisted language learning. Since 1989 he has been Director of the Language Media Center at Southern Illinois University at Carbondale where he has developed numerous programs for foreign language and ESL instruction. His areas of specialization include hypertext and interactive video/audio. Last year he completed an interactive videodisc project in business German, *Eine Reklamation*, which was supported by the Goethe Haus New York. He is also author of **SmarPext**, the multimedia hypertext authoring system.

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A PROTOTYPE INTERACTIVE ENVIRONMENT FOR COLLABORATIVE LEARNING

RICHARD C. WATERS, MITSUBISHI ELECTRIC RESEARCH LABORATORIES

ABSTRACT

We have implemented a prototype computer system that combines aspects of an on-line community with a virtual reality environment (Rich, et al. 1994a, 1994b). The system integrates a number of technologies we believe to be crucial to effective computer support interaction:

- spoken language input and output,
- gesture recognition and position sensing,
- real-time physically bas d animation, and
- artificial computer simulated agents.

The most innovative feature of the prototype is the fact that it integrates all five of these technology areas. Currently, no other system incorporates more than a couple of them.

The centerpiece of the presentation is a series of screen images demonstrating the prototype system in action. The demonstration session features four human users interacting with a computer simulated biped robot named Mike. The users move about in a virtual environment talking with each other and with Mike. Mike can understand simple spoken English sentences and respond to them with appropriate actions and spoken output. Each user sees and hears the virtual world from his or her own particular point of view. Although the system is not yet as responsive as we would like, all the interaction occurs in real time.

We believe that the technologies demonstrated by our system will be central to the future generations of computer assisted instruction systems in general and intelligent computer assisted langauge learning (ICALL) in particular. However, our current demonstration does not support ICALL *per se*. Nevertheless, creating a foreign language practice environment is one our primary long term goals. The presentation includes a short video illustrating how we envision our system being used for ICALL.

ACKNOWLEDGMENTS

The prototype interactive environment was the result of a two-year group effort involving eight researchers at Mitsubishi Electric Research Laboratories (MERL): Charles Rich, Carol Strohecker, Yves Schabes, William Freeman, Mark Torrence, Andrew Golding, Michal Roth, and the presenter.

The prototype benefited from the collaboration of a number of groups and individuals outside of MERL. Marc Raibert of the MIT Artificial Intelligence Laboratory and Boston Dynamics, Inc. was an active member of the design team from the very beginning. Raibert and his colleagues provided the graphic rendering, physical simulation, and posture control components of the prototype system, as well as the design of the animated characters used in the demonstration session.

The goal directed action subsystem, which generates Mike's responses, was built using software provided by Joseph Bates and his colleagues in the Oz Project at Carnegie Mellon University. The speech recognition system was provided by Victor Zue and his colleagues in the Spoken Language Research Group at MIT. The natural language parser borrows much from the work of Aravind Joshi and his colleagues at the University of Pennsylvania. Steve Blake designed and implemented the audio rendering component. Steve McNeon and Ilene Sterns turned the system output into the sequence of images used in the presentation.

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PRESENTER'S BIODATA

Dr. Waters received his Ph.D. in Artificial Intelligence with a minor in Linguistics from the Massachussets Institute of Technology in 1978. From then until 1991, he was co-principal investigator of the Programmer's Apprentice project at the MIT AI Lab — a project whose goal was the creation of intelligent computer agents to support programmers.

Since 1991, Dr. Waters has been a senior research scientist at Mitsubishi Electric Research Laboratories. His research is focused on computational linguistics and multiuser, interactive computer environments for collaboration, education, and entertainment.

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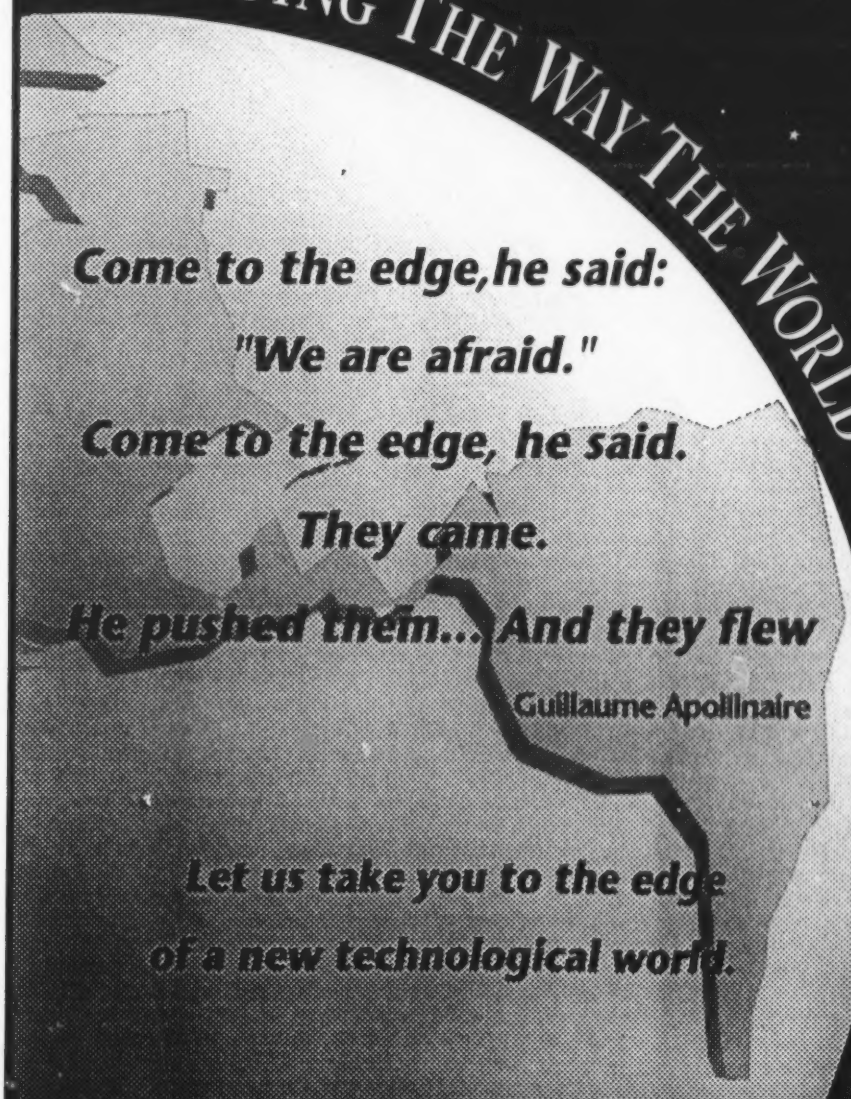

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"We are afraid."

Come to the edge, he said.

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He pushed them... And they flew

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